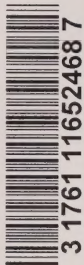


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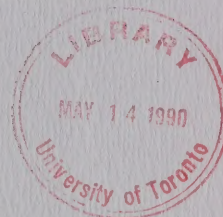
ENVIRONMENTAL ASSESSMENT BOARD

VOLUME: 196

DATE: Tuesday, May 1st, 1990

BEFORE: A. KOVEN, Chairman

E. MARTEL, Member



FOR HEARING UPDATES CALL (TOLL-FREE): 1-800-387-8810

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HEARING ON THE PROPOSAL BY THE MINISTRY OF NATURAL
RESOURCES FOR A CLASS ENVIRONMENTAL ASSESSMENT FOR
TIMBER MANAGEMENT ON CROWN LANDS IN ONTARIO

IN THE MATTER of the Environmental
Assessment Act, R.S.O. 1980, c.140;

- and -

IN THE MATTER of the Class Environmental
Assessment for Timber Management on Crown
Lands in Ontario;

- and -

IN THE MATTER OF a Notice by the
Honourable Jim Bradley, Minister of the
Environment, requiring the Environmental
Assessment Board to hold a hearing with
respect to a Class Environmental
Assessment (No. NR-AA-30) of an
undertaking by the Ministry of Natural
Resources for the activity of timber
management on Crown Lands in Ontario.


Hearing held at the Ramada Prince Arthur
Hotel, 17 N. Cumberland Street, Thunder Bay,
Ontario on Tuesday, May 1st, 1990, commencing
at 8:30 a.m.

VOLUME 196

BEFORE:

MRS. ANNE KOVEN
MR. ELIE MARTEL

Chairman
Member



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A P P E A R A N C E S

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MS. K. MURPHY)	RESOURCES
MS. Y. HERSCHER)	
MR. B. CAMPBELL)	
MS. J. SEABORN)	MINISTRY OF ENVIRONMENT
MS. B. HARVIE)	
MR. R. TUER, Q.C.)	ONTARIO FOREST INDUSTRIES
MR. R. COSMAN)	ASSOCIATION and ONTARIO
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MR. P.R. CASSIDY)	ASSOCIATION
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	FORESTRY (CENTRAL
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	WATCHDOG SOCIETY

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MR. C. BRUNETTA	NORTHWESTERN ONTARIO TOURISM ASSOCIATION

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I N D E X O F E X H I B I T S

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1132	Letter dated April 25, 1990 with supplementary materials to be referred to by Messrs. Stanclik, Bunce, Ferguson, Carrow and McCormack, and errata.	34746
1133	Letter dated April 27, 1990 enclosing copies of overheads to be referred to by Messrs. Tomchick and Stanclik.	34746
1134	Book of original photographs or slides to be referred to by Dr. McCormack and Dean Carrow.	34748
1135	Letter dated April 2, 1990 enclosing revised version of Appendix B to Panel 7 statement of evidence.	34748
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1 ---Upon commencing at 8:30 a.m.

2 MADAM CHAIR: Good morning. Be seated.

3 Ms. Cronk, I understand there is some
4 scheduling problem.

5 MS. CRONK: Yes.

6 MADAM CHAIR: Would you like to talk
7 about that?

8 MS. CRONK: Yes, thank you, Madam Chair,
9 there is.

10 I wish to confirm for the record advice
11 that we provided yesterday to affected parties. The
12 next panel of witnesses to be called on behalf of the
13 Industry was Panel 7 relating to tending and protection
14 of the timber resource. One of the lead witnesses on
15 that panel, Dr. Max McCormick from the State of Maine
16 has unfortunately and unexpectedly taken ill on the
17 weekend and has been hospitalized in Maine. As a
18 result of that, his attendance here this week is
19 impossible, although we are hopeful that he will be
20 released from hospital later this week although we
21 don't know at the moment the situation with respect to
22 that.

23 In addition, one of the other members of
24 Panel 7 on behalf of the Industry is Mr. Bill Smith a
25 representative of Abitibi-Price Inc. from the Lakehead

1 Woodlands Division, he too has had a personal family
2 difficulty arise that could not have been foreseen.
3 His attendance today is impossible because of that.

4 We very much regret obviously, Madam
5 Chair, these events occurring and wish to apologize
6 both to the Board and to any other parties -- all
7 parties for any inconvenience caused. We have proposed
8 however, and the suggestion has been made to other
9 parties and to the Board through Ms. Devaul, that in
10 the circumstances we would proceed this afternoon with
11 that portion of the tending evidence that can be called
12 in the absence of Dr. McCormick and Mr. Smith and that
13 will involve evidence from Dean Roderick Carrow and
14 certain other Industry representatives.

15 Then at the end of today Panel 7 we
16 propose should be adjourned, the continuation of
17 evidence from that panel, and commencing Thursday
18 morning we would proceed immediately to Panel 8 on
19 behalf of the Industry, the renewal panel. And for
20 that purposes, the renewal witnesses have been called
21 and alerted to that proposal and are arriving in
22 Thunder Bay this evening and tomorrow morning, if that
23 meets with the concurrence of the Board.

24 And, again, I can only say, Madam Chair,
25 that on occasion these things do occur. It is

1 obviously most regrettable for both individuals
2 involved, but we are prepared to proceed if it's
3 acceptable to the Board with the balance of the tending
4 and protection evidence on behalf of the Industry on
5 May 14th, I understand in Toronto, where the Board will
6 then be convening.

7 I should say as well, Madam Chair, that I
8 received a message this morning from Michelle
9 Swenarchuk on behalf of Forests for Tomorrow. The
10 message was from yesterday, but unfortunately it came
11 to the hotel where we are not, so we didn't get it
12 until this morning, and it was a request by Ms.
13 Swenarchuk that the renewal evidence at least next week
14 be heard in Toronto. That presents practical
15 difficulties for us at this stage and perhaps for the
16 Board, I don't know, but I wish to alert the Board that
17 that request was received this morning to us.

18 The practical difficulties for us of
19 course are that we have the renewal witnesses now
20 arriving in Thunder Bay for tonight and tomorrow
21 morning as indicated, however, I am in the Board's
22 hands on that matter.

23 There is also a physical space difficulty
24 I suspect without knowing, because my understanding is
25 that the Board's arrangements were to have hearing

1 space available to it commencing the week of May 14th.
2 I do not know what arrangements, if any, could now be
3 made with respect to next week, however, I put that
4 matter before you and alert you only to the practical
5 difficulty that I now have in asking these witnesses
6 who have yet to arrive to turn around and go to
7 Toronto.

8 I regret I didn't know Ms. Swenarchuk's
9 request on this matter earlier but, unfortunately, I
10 did not. And again, I express my apologies to the
11 Board and other parties for any inconvenience this may
12 have caused.

13 MADAM CHAIR: Thank you, Ms. Cronk. We
14 heard about your problems with your witnesses yesterday
15 and your proposal was put to us and we thought that was
16 the sensible way to go. We didn't consult with the
17 other parties. Does anyone have anything to say about
18 this change in scheduling?

19 MS. SEABORN: Madam Chair, in Ms.
20 Swenarchuk's absence - and Ms. Cronk has already
21 mentioned this - she asked me to put on the record that
22 she does have a concern about changing the location of
23 the panel. She had always been organizing her plans
24 and working towards having Panel 8 in Toronto. She was
25 not going to be the lawyer cross-examining on Panel 7,

1 she is going to be cross-examining Panel 8, and she
2 just wanted the Board to be aware that it does cause
3 her some inconvenience.

4 And if other parties' situations could
5 also be taken into account in the future in these sorts
6 of decisions she would appreciate that consideration.
7 She wanted to make it clear that she has no problem
8 with the Industry going ahead with Panel 8 before Panel
9 7 and is quite happy not to lose any hearing time and
10 thanks Ms. Cronk for that proposal.

11 MADAM CHAIR: Thank you. As it stands,
12 next week apparently if we are in Thunder Bay we have
13 to sit Monday, Tuesday and Wednesday. Through some
14 problem we can't have this room next Thursday.

15 MS. CRONK: I see.

16 MADAM CHAIR: We learned that this room
17 will not be available next Thursday which means that if
18 we come to Thunder Bay next week we have to sit Monday,
19 Tuesday, Wednesday. It hadn't been suggested to me
20 that we go to Toronto, but if we did then we would sit
21 Tuesday, Wednesday, Thursday.

22 You might want to think about that over
23 the morning and talk to your witnesses--

24 MS. CRONK: Thank you, Madam Chair.

25 MADAM CHAIR: --and see if it's more

1 convenient for them to fly to Toronto on Monday--

2 MS. CRONK: Yes, I understand your
3 proposal.

4 MADAM CHAIR: --as opposed to coming in
5 here next Sunday night, then we might do that.

6 MS. CRONK: Would it be possible for the
7 Board to make arrangements for hearing room space for
8 next week in Toronto?

9 MADAM CHAIR: Well, as a fallback we have
10 our own Board room.

11 MS. CRONK: I see, of course.

12 MADAM CHAIR: And given the number of
13 people we've had -- how many witnesses are on Panel 8?

14 MS. CRONK: Seven.

15 MADAM CHAIR: Seven. We might be able to
16 fit in. Ms. Devaul can call our new office space and
17 find out how the preparations - I see her nodding her
18 head - no, I guess if we go back to Toronto it will be
19 in the Board room.

20 MS. CRONK: Could I then take the
21 morning, as you suggest, Madam Chair, to consider this
22 and also I will attempt to reach one or more of the
23 witnesses and perhaps at the commencement of Panel 7
24 this afternoon I could let you know at least what our
25 position is in that regard.

1 MADAM CHAIR: That is fine, thank you.

2 MS. CRONK: Thank you very much.

3 MADAM CHAIR: Ms. Seaborn, are you ready
4 for your cross-examination of Panel 6?

5 MS. SEABORN: Thank you.

6 Good morning, members of the panel.

7 Madam Chair, I would like to begin by
8 filing a number of Ministry of Environment
9 interrogatories in relation to this panel. The first
10 bundle of interrogatories relate to Panel 6 and for the
11 record they are Questions 1, 3, 5(a), 5(e), 6 and 7.

12 MADAM CHAIR: And these are Ministry of
13 the Environment interrogatories?

14 MS. SEABORN: Yes, and those would be
15 exhibit...?

16 MADAM CHAIR: 1127.

17 MS. SEABORN: Thank you. (handed)

18 ---EXHIBIT NO. 1127: MOE Interrogatory Question Nos.
19 1, 3, 5(a), 5(e), 6 and 7.

20 MS. SEABORN: And the second group of
21 interrogatories I would like to file are from Panel 4,
22 Ministry of the Environment Interrogatory Nos. 3, 4,
23 5(b), 9, 12, 14, 16, 17(c), 19, 20, 21, 22, 26, 28 and
24 29.

25 MADAM CHAIR: That is Exhibit 1128.

1 MS. SEABORN: (handed)

2 MADAM CHAIR: Thank you.

3 Ms. Seaborn, do you have another copy of
4 Exhibit 1128?

5 MS. SEABORN: (handed)

6 ---EXHIBIT NO. 1128: MOE Interrogatory Question Nos.
7 3, 4, 5(b), 9, 12, 14, 16, 17(c),
19, 20, 21, 22, 26, 28 and 29.

8 GARY MacKAY,
9 IAN ROBERT METHVEN,
10 DONALD B. HOPKINS,
11 WILLIAM J. ROLL,
12 DONALD R. JOHNSTON,
13 PETER MITCHELL MURRAY, Resumed

14 CROSS-EXAMINATION BY MS. SEABORN:

15 Q. I would like to begin this morning
16 with some questions for you, Mr. Roll.

17 Mr. Roll, we have heard evidence during
18 MNR's case about silvicultural ground rules and
19 silvicultural guides, and I believe the Industry's
20 position before the Board is that Industry is prepared
21 to operate within prescriptions contained in existing
22 silvicultural guides, ground rules and pursuant of
23 course to applicable federal and provincial
24 legislation.

25 Is that a fair summary of your position?

MR. ROLL: A. Yes, it is, especially
when coupled with the Industry planning proposal in

1 Panel 10 for upgrading and keeping those guides up to
2 date.

3 Q. And you have also said that you wish
4 to maintain flexibility to set prescriptions; is that
5 correct?

6 A. Within the terms of those various
7 guides and guidelines, yes.

8 Q. And in response to a question from
9 Mr. Martel early on in this panel, I believe you said
10 that under MNR's proposed timber management planning
11 process you feel that you have the flexibility to set
12 prescriptions and still comply with the silvicultural
13 guides and the ground rules?

14 A. Yes. We currently do, yes.

15 Q. And when these silvicultural ground
16 rules are negotiated prior to the signing of an FMA, do
17 you know if there is a requirement that the ground
18 rules be in accordance with the existing silvicultural
19 guides?

20 A. I couldn't say. No, I am not...

21 Q. You are not aware?

22 A. I am not sure whether there is a
23 requirement that that happen.

24 Q. Would any of the other members of the
25 panel have any knowledge of that who have had

1 experience with negotiating FMAs?

2 Mr. MacKay is shaking his head. Mr.
3 Murray?

4 MR. MURRAY: A. (nodding negatively)

5 Q. Mr. Johnston? Mr. Hopkins?

6 (no response)

7 Now, Dr. Methven, you explained at the
8 outset of your evidence that a silvicultural system is
9 composed of a reproduction method, for example
10 clearcutting, plus a number of tending operations; is
11 that correct?

12 DR. METHVEN: A. That's correct, yes.

13 Q. And you also explained that a harvest
14 system is something different?

15 A. That's correct.

16 Q. And a harvest system has the four
17 components of felling, the form in which the timber is
18 moved to roadside, the off-road transport function and
19 the processing function; is that correct?

20 A. That's correct.

21 Q. In your evidence you say that it is
22 the combination of felling, processing, transport and
23 method that is important, so that there may be
24 important differences within, for example, the
25 full-tree harvest method as opposed to differences

1 between harvest methods.

2 A. Between the harvest systems, yes.

3 Q. Okay. And encompassed within your
4 definition, Dr. Methven, of harvest system would you
5 also include the timing of cuts, for example, whether a
6 harvest was winter versus summer?

7 A. Yes.

8 Q. Mr. Roll, one of the things that you
9 set out in your evidence was that it was the Industry's
10 view that harvesting is a vital step in the renewal
11 process and, further, that no one timber management
12 activity should be viewed in isolation; is that
13 correct?

14 A. Yes, that's correct.

15 Q. And in your view then, there is a
16 vital link in Industry's mind between harvest system
17 and renewal options; is that fair?

18 A. Yes. That is one of the links, yes.

19 Q. And presumably you would want someone
20 looking at one of your management plans not to look at
21 any one activity in isolation especially with respect
22 to harvest and renewal activities?

23 A. Yes, I think that is fair.

24 Q. I would like to ask you some
25 questions in relation to an interrogatory that was

1 previously filed as Exhibit 1104 and it's Ministry of
2 Environment Question 1 that relates to Panel 4.

3 MS. SEABORN: Does the Board have their
4 exhibits from Panel 4 with them this morning?

5 MADAM CHAIR: We don't have Exhibit 1104.

6 MS. SEABORN: I apologize, Madam Chair, I
7 thought the case studies material were still in front
8 of you.

9 MADAM CHAIR: Oh, I am sorry. Of course
10 we have the case studies here, that is Exhibit 1100.

11 MS. SEABORN: But not the interrogatories
12 that were earlier filed with them?

13 MADAM CHAIR: No, those are separate.

14 MR. CASSIDY: I have a copy of MOE No. 1.

15 MS. SEABORN: Yes. Thank you, Mr.
16 Cassidy. I apologize, it was my error, I should have
17 alerted Ms. Devaul that I would like to refer to that
18 interrogatory.

19 MR. CASSIDY: (handed)

20 MADAM CHAIR: Thank you, Mr. Cassidy.

21 MS. SEABORN: Q. Do you have that
22 question in front of you, Mr. Roll?

23 MR. ROLL: A. Yes, I do.

24 Q. Now, in this question what we asked
25 for was copies of the Table 4.11 and an identification

1 of the silvicultural ground rules that were in effect
2 for each case study. And I would like to ask the
3 members of the panel some questions in relation to the
4 ground rules for each case study.

5 Mr. Roll, could we start with you. Could
6 you turn to page 50 of case study 4A.

7 A. Yes, I have it.

8 Q. Thank you. Now, page 50 provides the
9 silvicultural ground rules for the English River FMA
10 and if we look at the second page of the ground rules,
11 Table 1, under the column Method of Harvest, you will
12 see they're identified throughout as clearcut,
13 clearcut, clearcut and alternate blocks, clearcutting,
14 alternate blocks or strips.

15 Now, would you agree with me, Mr. Roll,
16 that what is identified under Method of Harvest is not
17 the harvest system but the silvicultural system?

18 A. Yes, I would agree with that.

19 Q. And looking at these ground rules
20 they tell us nothing about the harvest system that was
21 actually employed on a particular -- I am sorry, about
22 the harvest options that could be employed on that site
23 type, for example, shortwood, tree-length, full-tree?

24 A. No, they don't.

25 Q. And without going through all the

1 silvicultural ground rules would you agree with me that
2 throughout the ground rules, again under Method of
3 Harvest, we would see identified the silvicultural
4 system?

5 A. Yes, that's right.

6 Q. Now, Mr. MacKay, could we turn to
7 your case study which is 4B and could you confirm for
8 me as well that if we look at the silvicultural ground
9 rules that are found in Appendix 1 -- and those start
10 at page 43 of your case study.

11 MR. FREIDIN: Page 43, Tab B?

12 MR. CASSIDY: Yes.

13 MR. MacKAY: Yes, I have them.

14 MS. SEABORN: Q. We will see that under
15 Method of Harvest again what has been identified for
16 these site descriptions is the silvicultural system as
17 opposed to the harvest system?

18 MR. MacKAY: A. That's correct.

19 Q. And, Mr. Johnston, if you look at
20 case study 4C Appendix 1 which begins at page 42, again
21 under Method of Harvest, would you agree that what we
22 see identified is silvicultural system rather than
23 harvest system?

24 MR. JOHNSTON: A. Yes, that's correct.

25 Q. And, Mr. Hopkins, if we look at 4D

1 your case study which begins at page 47, again we see
2 under Method of Harvest a silvicultural system
3 identified; is that correct?

4 MR. HOPKINS: A. Yes, that's correct.

5 Q. And finally, Mr. Murray, in relation
6 to the G.W. Martin case study, if we go back to the
7 Interrogatory 1104, in this particular case study the
8 silvicultural ground rules were appended to the
9 response and again under the column Harvest what is
10 identified is the silvicultural system?

11 MR. MURRAY: A. Yes, agreed.

12 Q. Mr. MacKay, in relation to case study
13 4B if you could turn to Exhibit 1128 which is the
14 bundle of interrogatories that I filed this morning
15 that relate to Panel 4, and Question 16.

16 MR. MacKAY: A. Okay.

17 Q. We had asked for a copy of Schedule C
18 of the FMA agreement for the Upper Spanish Forest. Can
19 you confirm for me that the ground rules in the FMA
20 agreement are the same ground rules that were provided
21 in the case study?

22 A. I couldn't say for sure, I would have
23 to spend some time and look the two over. I have not.

24 Q. Perhaps you could check that for me
25 at the break, just quickly compare between the case

1 study and you could come back and confirm that for me.
2 It's my understanding from quickly looking at the
3 tables that the ground rules are the same.

4 A. Yes.

5 Q. Thank you.

6 Now, Mr. Roll, the silvicultural ground
7 rules that relate to the case studies that we just
8 looked at were prepared prior to the introduction of
9 the current timber management planning manual; is that
10 correct?

11 MR. ROLL: A. Yes, that's right.

12 Q. And in light of your evidence earlier
13 on that activities being carried out should be done so
14 in compliance with MNR guidelines, would you agree that
15 the ground rules today should be prepared in accordance
16 with the provisions of the timber management planning
17 manual?

18 A. Yes, I would agree with that.

19 Q. And could we look at the manual for a
20 moment at page 65, and that is the Table 4.11,
21 Silvicultural Ground Rules for Normal Operations.

22 A. Yes.

23 Q. Now, according to the new timber
24 management planning manual there is a provision for the
25 plan author or forester setting the silvicultural

1 ground rules to identify both the silvicultural system
2 and the method of harvest; is that correct?

3 A. Yes, that's the table.

4 Q. And would you agree that what should
5 appear in terms of method of harvest would be an
6 identification of the harvest system that is going to
7 be employed for that site type and the harvest system
8 options?

9 A. I would think that there -- it might
10 be appropriate to list options but again, as I had said
11 previously, I wouldn't want that to be the reason for
12 limiting any innovation or any new developments with
13 harvesting systems.

14 Q. No, I understand that and I accept
15 that there may be some other reason to leave your
16 options open with respect to new technology, but in
17 terms of what we have talked about earlier and what
18 your evidence has been in this panel, and especially
19 like Dr. Methven's explanation of how Industry views a
20 harvest system, would you agree that what should be
21 identified under that column should be the components
22 of a harvesting system as you have described them in
23 this evidence?

24 A. Again, I think that would be
25 extremely difficult at the five-year planning level,

1 to be that specific.

2 Q. Okay. How specific as a field person
3 do you think one can be then at this planning stage?

4 A. I think that it's even difficult at
5 the five-year planning stage to be as specific as
6 pinning down the method that you might use having to do
7 with whether you are going to be taking the product out
8 as 8-foot or tree-length or full-tree, even that is
9 extremely difficult at the five-year period.

10 And certainly beyond that, when you get
11 into the availability of manpower, specific type of
12 equipment and so on, it becomes even more difficult.

13 Q. But aren't you identifying at this
14 stage of the planning process what your options are
15 going to be for that particular site type in terms of
16 your harvest system?

17 A. Yes.

18 Q. And so in terms of setting out your
19 options - and I would like to look at it in the context
20 of options - would it be fair to say that under method
21 of harvest, you should be in a position to set out what
22 the harvest system options are?

23 A. Harvest system options having to do
24 with the specific types of equipment that we would be
25 using to -- or combinations of equipment?

1 Q. That's right.

2 A. Again, no, I don't think that is
3 appropriate at the five-year level.

4 Q. Well, isn't it true that on certain
5 management units your options are going to be limited
6 because of the type of equipment you actually have in
7 any event.

8 A. Perhaps at any one point in time, but
9 I think that is just the point, that it's not only the
10 kind of equipment that changes but we are also dealing
11 with a really dynamic resource and including the
12 weather conditions and so on, and I just can't see that
13 it's appropriate five years beforehand to begin to be
14 so specific about those kinds of components. So it's
15 not only the equipment.

16 Q. Okay. Could you turn to page 66 of
17 the manual. And Item 6, and this is on the back page
18 of the table--

19 A. Yes.

20 Q. --refers to method of harvest:
21 "Enter the harvesting method to be
22 used. Where there are options, give them
23 in order of preference with the
24 conditions that will be used to guide the
25 choice."

1 Now, is it your position that that's not
2 possible to do at the five-year level?

3 A. I think it's very difficult.

4 Q. So it would be your position then
5 that this is a requirement that Industry would like to
6 see changed in terms of changing the Timber Management
7 Planning Manual?

8 A. I find it very difficult to speak to
9 this. My experience and my expertise hasn't been in
10 this field and I have not worked directly with this
11 Timber Management Planning Manual. So I find that very
12 difficult.

13 I know from my experience, though, in
14 harvest that I personally would find it very difficult
15 to be able to predict these things five years ahead. I
16 guess that's the limit of what I can help you with.

17 Q. Okay. The difficulty I'm having with
18 this is, based on your evidence at the outset you had
19 spoken greatly of the importance that Industry sees of
20 this link between harvest and renewal.

21 Now, we've looked at the silvicultural
22 groundrules for the case studies and what we see in all
23 these groundrules is that someone, either a member of
24 the public or anyone else viewing these groundrules,
25 they will see under method of harvest clearcut and

1 under silvicultural system clearcut and to me that does
2 not provide, in the context that you've given evidence,
3 any link between the harvest and renewal and it doesn't
4 give any insight to someone reviewing the plan as to
5 how Industry sees that link working. Would you agree
6 with that?

7 A. Yes, I would.

8 Q. Okay. And in terms of the
9 instructions on page 6, the example that's given --
10 under Item 6 on page 66, the example is given, for
11 example, clearcutting might be the first choice.

12 Now, based on your definition of a
13 harvest system, would you agree that in any event you
14 should not be identifying as your method of harvest
15 clearcutting?

16 A. Yes, that's right.

17 Q. Okay. I think what we have is a
18 mix-up in the terminology here, though, between the
19 terminology that we've used specifically to try and
20 describe our activities in the context of silvicultural
21 systems, you know, as harvest systems and harvest
22 methods. We attempted to try and clear up the
23 terminology and I guess some of that conflicts with
24 what's in the Timber Management Planning Manual.

25 Q. And I think that in terms of clearing

1 up the terminology I thought your evidence was quite
2 clear in making this -- first of all, let's deal with
3 harvest systems, let's deal with silvicultural systems
4 and let's have the link between the two.

5 And in terms of planning and in terms of
6 identifying those options, all I'm suggesting is that
7 wouldn't it make more sense in your Table 4.11 to show
8 this harvest -- to show these harvest system options,
9 to show these silvicultural system options so that
10 someone viewing the plan can also view that link and
11 get away from the calling the method of harvest
12 clearcut?

13 A. Again, I don't think it's
14 appropriate. Even if the range of options were listed
15 and you wanted an exhaustive range that was applicable
16 to that particular kind of a site and the combinations
17 of activities of the various activity components from
18 harvest through to renewal and so on would still be
19 tremendous.

20 Again, I guess we feel that it's
21 appropriate to make on-the-ground decisions based on
22 the body of knowledge that's been described, you know,
23 the various guides and guidelines and the planning
24 process and everything that's been previously
25 described.

1 Q. Well, I don't want to get into a long
2 discussion of permutations and combinations of what can
3 happen with Table 4.11, but I guess going back to the
4 simple point is, Dr. Methven has said in his evidence
5 that often there are differences within a harvest
6 system, such as full free harvesting, depending on how
7 you choose your components and there may be more
8 differences between within a full-tree harvesting
9 system than there are between full-tree versus
10 tree-length.

11 What I'm suggesting is that when you are
12 setting out your options, so that people can really
13 understand what it is the foresters want to do,
14 wouldn't it make sense to set out your options based on
15 those definitions and that terminology rather just
16 giving a member of the public reviewing the groundrules
17 clearcut, clearcut?

18 A. Again, I don't think it's
19 appropriate. I think it would be an extremely -- I
20 don't think the exercise would do any good in that the
21 range of options are so wide and it's very difficult to
22 be predictive of what types of equipment might be
23 available, what the range of conditions under which
24 that equipment would be working with even on one site
25 or working within even on one site. I think it would

1 be very difficult.

2 Q. Mr. Roll, if you want to be able to
3 have flexibility to make -- to set your silvicultural
4 groundrules and to operate within the bounds of
5 silvicultural guides, aren't your options narrowed in
6 any event? Once you accept that there are certain
7 bounds in which you have to operate based on science--

8 A. Yes.

9 Q. --then your options are limited;
10 correct?

11 A. Yes, that's right.

12 Q. Okay. And from that point on, if you
13 look at the silvicultural guides for a particular
14 species and then you look at the experience you've had
15 on a particular unit, I would suggest that your options
16 are going to be narrowed in any event based on
17 equipment availability, for example, and based on a
18 particular species?

19 A. They will be narrowed but, again, the
20 example that you used - you referred to Dr. Methven's
21 evidence with respect to differences within systems -
22 those differences can be as varied as how you fell a
23 tree at the stump, whether you use a power saw with a
24 power saw operator at the stump to fell a full tree,
25 for example, whether you use a mechanical harvester

1 with tracks versus wheels, whether you use shears
2 versus saw in that one operation at the stump and each
3 one of those takes a different kind of piece of
4 equipment to do, then when you add in the forwarding
5 component or the skidding component it can be anything
6 from skidding with conventional skidders with certain
7 tire configurations, it can go through the range of
8 grapple skidders and clambunk skidders that's available
9 right up to forwarders that would pick up the entire
10 tree and load the entire tree.

11 So that's what I'm having difficulty
12 with, it's extremely difficult.

13 Q. Doesn't that drive you to the
14 conclusion then that if it's that difficult that the
15 silvicultural groundrules are really then quite
16 meaningless because what you're saying is that you
17 can't narrow it down at all, your flexibility is such
18 that you think you can do anything on the site, but I
19 think we've also heard evidence that Industry is moving
20 towards, for safety reasons, for economical reasons,
21 moving away from having people out in the field with
22 chain saws.

23 I think Mr. Hopkins' evidence was that
24 since 1980 and recent times they have acquired more
25 mechanical -- mechanized equipment on their site and

1 they were no longer sending people out in the bush with
2 chain saws.

3 So your options are going to be limited
4 based on economic reality in any event and all I'm
5 suggesting is, if that's case why not set that out
6 early on in your process?

7 MR. MacKAY: A. Excuse me, maybe I can
8 help Mr. Roll here. The options are going to be
9 narrowed for sure in what you've just spoken of with
10 conventional chain saws and whatnot, but as a research
11 engineer for our company I think our options are more
12 than covered or expanded more than what we lose with
13 the new developments and research and equipment that's
14 available and coming available and in five years from
15 now it would probably be mind boggling the amount of
16 technology and new information that we would acquire.

17 So to try and determine that now for five
18 years in the future would be very difficult.

19 Q. Mr. MacKay, I think in terms of my
20 questions I'm not suggesting that I expect on a
21 five-year basis the type of equipment to be identified,
22 I'm just trying to suggest that based on Dr. Methven's
23 definition, at the very least, when silvicultural
24 groundrules are stated, we should get away from under
25 your method of harvest saying the silvicultural system,

1 we should at least identify full-tree, tree-length,
2 shortwood.

3 Would you agree with that, Mr. Roll? We
4 should at least go that far under method of harvest?

5 MR. ROLL: A. Again, I said earlier in
6 answer to a question that I thought even that would be
7 very difficult and be limiting to what's reasonable
8 both from an operating point of view, as well as from
9 sort of protection of the site point of view.

10 In terms -- you made reference just a few
11 moments ago to the fact that your only identifying
12 silvicultural systems making the silvicultural
13 groundrule meaningless, I don't think so. I think that
14 what the silvicultural groundrules do is identify a
15 target or sort of a result that you want to achieve and
16 you work within that context. Our planners and our
17 operating people work within that context to plan
18 operations that will in the end give us those kinds of
19 results.

20 So while you don't identify it, you
21 certainly use the targets that are identified and you
22 work within the conditions identified in the
23 silvicultural groundrules to get that part.

24 Q. Okay. Just to finish up on this area
25 then. If your -- your evidence has been that this link

1 between harvest and renewal is critical--

2 A. Yes.

3 Q. --correct?

4 A. Yes.

5 Q. You don't want people viewing your
6 activities in isolation and all I'm suggesting is that
7 this is something that Industry should be -- let me
8 move back.

9 If Industry wants to take the position
10 that they want to have the maximum amount of
11 flexibility to conduct operations, for those people who
12 are concerned about harvest methods; i.e., full-tree
13 harvesting on particular sites, they should be able to
14 see that link between harvest and renewal at the
15 five-year operating stage and I'm not suggesting that
16 they set out exactly the type of equipment and be that
17 specific, but there has to, as a first step, be that
18 link between what your harvest system is going to be
19 and what your renewal system is going to be.

20 Would you accept that?

21 A. I would with the provision that I
22 think some of the things you're suggesting,
23 particularly with respect to full-tree harvest, has to
24 do with the appropriateness of the system given the
25 questions over its site specific application and I

1 would say yes. Given there is some kind of scientific
2 proof or whatever that it's appropriate on a certain
3 site or not another, then I would say certainly it
4 could be included in there.

5 MS. SEABORN: I would like to file an
6 interrogatory that was posed by Forests for Tomorrow in
7 relation to Panel 4 and it's question 29.

8 MADAM CHAIR: That's Exhibit 1129.

9 MS. SEABORN: (handed)

10 MADAM CHAIR: Thank you.

11 ---EXHIBIT NO. 1129: FFT interrogatory No. 29 and
12 answer thereto (Panel 4).

13 MS. SEABORN: Q. Now, this was a
14 question, Mr. Hopkins, that Forests for Tomorrow asked
15 in relation to case study 4D and they asked for the
16 silvicultural groundrules for the black spruce lowland
17 sites in use for the management period 1990 to 1995.

18 I just have a couple of questions of
19 clarification in relation to this response. Under --
20 you will see on the first page under Silvicultural
21 System it says full marketable harvest. What does that
22 mean?

23 MR. HOPKINS: A. That really refers to a
24 clearcut silvicultural system removing all the
25 merchantable wood in the approved cutting areas.

1 Q. For that particular site type?

2 A. That's correct.

3 Q. And for this particular site type
4 there are no other options identified; correct?

5 A. With respect to what? I don't
6 understand the question.

7 Q. With respect to a silvicultural
8 system, this is the only option that's been put forward
9 for this particular site?

10 A. That's correct.

11 Q. Okay. And looking at the groundrules
12 that are identified under Method of Harvest, you will
13 see that the identification is full-tree/tree-length
14 mechanized or conventional and would you agree with me
15 that that would provide a forester with maximum
16 flexibility in terms of a choice of harvest system on
17 that site?

18 A. Yes, and actually this is an example
19 of what Mr. Roll was referring to. At the start of our
20 FMA, our groundrules were not open enough with regards
21 to the method of harvest and actually our systems
22 changed so much that when we did these groundrules we
23 recognized the fact that we were actually not really
24 stating what we were doing in the groundrules, so we
25 opened them up and made them more general to allow for

1 changes such as wide tired skidders changing to
2 track -- wide track skidders and changes in our
3 harvesting system.

4 Q. And would you agree, Mr. Hopkins,
5 under the method of harvest we don't have identified a
6 harvest system in terms of the components that Dr.
7 Methven talked about for a harvest system?

8 A. Yes, and I would like to repeat, as
9 Mr. Roll is saying, our experience with the first few
10 round of groundrules our changes that took place in the
11 harvesting systems were so dramatic that there was no
12 way that in the five-year timber management -- or the
13 five-year planning stage that we could promise that we
14 were going to deliver a certain type of harvesting
15 system because of the changes that have taken place and
16 will probably continue to take place in the future.

17 Q. Okay. These groundrules apply to the
18 timber management plan that would have actually just
19 gone into effect from 1990 to 1995.

20 Looking at the groundrule options then
21 for method of harvest, we don't know in looking at
22 these groundrules what the various ranges or
23 differences are within a particular harvest system, for
24 example, within a full-tree harvest system; is that
25 correct?

1 A. I don't really understand your
2 question, could you just repeat it again?

3 Q. Okay. There has been evidence given
4 that there are lots of -- you may choose a harvest
5 system to be full-tree harvesting but within that
6 choice of full-tree harvesting there is a range of
7 options in terms of the different components that would
8 be used to full-tree harvest a particular site, and
9 what I'm suggesting is that by looking at this
10 particular -- these particular set of groundrules you
11 can't tell what those variations are with respect to
12 full-tree harvesting?

13 A. Yes, and I believe that's -- and that
14 is because at this stage when the groundrules
15 prescriptions are made we cannot guarantee the way or
16 the method of harvest. And our experience in the first
17 few periods, as I have said, indicates that is the
18 case, that we've changed from tree-length to full-tree,
19 from conventional systems to mechanized systems. The
20 changes have been so numerous that it would be
21 inappropriate at this level to try to narrow that down.

22 Q. Dr. Methven, I have a few questions I
23 would like to ask you. In your evidence you spoke
24 about -- you spoke of jack pine as being a perfectly
25 fire adapted species; is that correct?

1 DR. METHVEN: A. That is correct.

2 Q. And you spoke about -- that if a
3 large mature jack pine stand burns down the area should
4 regenerate naturally to jack pine; correct?

5 A. That's correct.

6 Q. Now, what would happen if that
7 regenerated stand burned down again prior to reaching
8 the age at which it can produce seed?

9 A. The frequency of the fire would be
10 outside the regime to which that species is adapted and
11 regeneration would be very poor.

12 Q. Okay. And in response to a question
13 from Ms. Swenarchuk last week you said, I believe, that
14 with jack pine you won't get seed from the site to
15 produce a stand but you will get some from the slash
16 based on jack pine having a serotinous cone?

17 A. You may with the appropriate
18 treatment and weather conditions, yes.

19 Q. And would you agree that if you
20 remove the slash through full-tree harvesting then
21 regeneration through natural seeding would not be
22 successful for jack pine?

23 A. That's correct.

24 Q. Now, in your evidence you also
25 explained that if the role of fire is not replaced and

1 unbalanced development class distribution is created
2 and eventually most forest stands will die without
3 being regenerated and the forest can degenerate into a
4 savannah shrubland dominated by ericaceous shrubs.

5 If you had a natural disturbance such as
6 a second fire before jack pine cones produce seed or a
7 man-made disturbance such as a full-tree harvest of a
8 jack pine site and leaving it to natural regeneration,
9 would it be possible then for that site to degenerate
10 as well into a savannah shrubland?

11 A. If we don't take the appropriate
12 measures to regenerate areas then they won't
13 regenerate, or if they do it will be extremely slow
14 over a long period of time.

15 Q. Thank you. I wanted to as well ask
16 you some questions in relation to your evidence
17 regarding fire suppression.

18 Would you agree that since 1917 at least
19 MNR has significantly improved its fire fighting
20 capabilities?

21 A. Very much so.

22 Q. And in your view when did intensive
23 fire management begin in Ontario?

24 A. It has gone through a large number of
25 changes, but I suppose -- that's a difficult question.

1 Maybe in the 30s.

2 Q. Would it have been later in terms of
3 having a full fleet of water bombers, the 50's or so?

4 A. Yes.

5 Q. And would you accept that the first
6 priority in modern day fire suppression is to prevent
7 injury and loss of life or property?

8 A. Definitely, yes.

9 Q. I would like to look for a moment at
10 an interrogatory that we posed in relation to Panel 6,
11 question 5(b) and that is Exhibit 1127 which was handed
12 out this morning.

13 We asked for a table that would show the
14 total number of fires including lightening and
15 man-caused and hectares burned by fires that exceeded
16 100,000 hectares.

17 Now, I had a look at this table in terms
18 of the response looking at the decades and if we
19 breakdown the table by decade, would you agree that in
20 terms of total number of hectares burned the 1980s is
21 the decade in which the greatest area was burned?

22 A. Yes, the 80s have been a very bad
23 decade, that's true.

24 Q. So even with fire suppression in the
25 1980s we still had a relatively large number of fires

1 burned during that period?

2 A. That is true.

3 Q. And the second largest decade by my
4 calculation was interestingly enough the 1920s. Would
5 you agree with that?

6 A. Yes.

7 Q. And I just want to look for a moment
8 at a statistic that was provided by MNR in one of its
9 witness statements.

10 MS. SEABORN: That, Madam Chair, is Panel
11 4 of MNR's evidence. It is a short sentence. I'm not
12 sure you need turn to it. Page 27.

13 Q. And this is in the witness -- the
14 executive summary of the witness statement and under
15 paragraph 4 it says:

16 "Increased protection from forest fires
17 and budworm infestation has also
18 been necessary. For example, during the
19 period 1973 to 1987 the area burned by
20 wild fire was in excess of 3 million
21 hectares or 450 per cent more than in
22 the previous 14 years."

23 And, Dr. Methven, that would accord with
24 your evidence that the 80s has been a bad decade for
25 fire?

1 DR. METHVEN: A. Yes, it has been.

2 Q. Okay. And if we compare the 1980s
3 to, for example, the 1920s, would you agree that the
4 harvest levels during the 80s have been somewhat
5 greater than the harvest levels in the 20s?

6 A. I haven't actually compared the
7 figures myself, but I presume that's true, yes.

8 Q. Now, in your direct testimony you
9 said that as a result of fire suppression efforts the
10 fire cycle has been increased from 100 years to 700 to
11 800 years; is that correct?

12 A. That is correct.

13 Q. Now, if you turn to page 47 of your
14 witness statement, I take it that you based your 700 to
15 800 years by looking at the average number of
16 lightening fires a year between the period 1925 to
17 1987?

18 A. No, I wasn't concerned so much with
19 the number as I was concerned with the area burned.

20 Q. Okay. So you looked at then the
21 average number of hectares burned per year?

22 A. Yes.

23 Q. Okay. And in that case it was the
24 75,477 hectares. Now, if we look at the interrogatory
25 response again, question 5(b), the total number of

1 hectares burned during the 80s was approximately
2 2,240,000 and subject to checking my addition would you
3 accept that?

4 A. Yes.

5 Q. And the average then for that
6 particular decade would be 224,000 over 10 years?

7 A. Yes.

8 Q. Now, based on this average what would
9 be the approximate fire cycle?

10 A. It would somewhat shorter than the
11 total fire cycle that I included here, but fire cycles
12 fluctuate widely from decade to decade and century to
13 century, so this is part of the normal fluctuations,
14 yes.

15 Q. Okay. The fire cycle then just for
16 the 80s, would it be fair to say it would be in the
17 vicinity of 210 years based on that average?

18 A. Yes, it would be over 200 years.

19 Q. Okay. And if we assume for a moment
20 that modern day harvest levels amount to approximately
21 200,000 hectares per year, would you agree that the
22 disturbance cycle would be approximately just over a
23 hundred years then for that decade?

24 A. Yes, we have to be careful here that
25 we don't compare different areas. This includes the

1 total with respect to the fires which includes
2 protected and non-protected areas from fire.

3 Timber only includes protected areas, so
4 they are not directly comparable in that sense. The
5 actual fire cycle in the areas in which timber harvest
6 has been carried out is still much higher.

7 Q. And if we were outside the area of
8 the undertaking our main concern would be the
9 protection of life and property; would it, rather than
10 protection of timber values?

11 A. Yes, that's correct.

12 Q. Okay. Now, you also said in your
13 evidence that without fire suppression it was your
14 opinion that 10 to 20 times the area now burnt would be
15 burning today; is that correct?

16 A. That was my judgment, yes.

17 Q. Okay. Now, looking again just at a
18 decade such as the 80s, if you accept for the moment
19 that the average number of hectares burnt in the 1980s
20 was 224,000 and you multiplied that by 10 to account
21 for what you suggest the extra area that would be burnt
22 as a result of no fire suppression. What would be the
23 fire cycle under that scenario?

24 A. It would be down around 50 or so or
25 less.

1 Q. So it will be under 50 years?

2 A. Yes, the five to six driest years we
3 have on record have occurred in the 80s, so it's a
4 major change.

5 Q. Okay. So then just looking at the
6 80s we may have a significant reduction in terms of the
7 fire cycle in terms of the number of years?

8 A. Through this decade, yes, but you
9 have to be careful with calculating a fire cycle just
10 on a single decade, it's a dangerous thing to do
11 because it does fluctuate greatly.

12 Q. I understand that, but it caused me
13 some concern when you talked about a fire cycle now
14 being increased from 700 to 800 years, but if you look
15 at a dry decade like the 80s in fact we have a fire
16 cycle that has been substantially reduced from the 700
17 to 800 years?

18 A. In this decade, yes.

19 Q. Okay. And how did you arrive at your
20 opinion or your judgment that without fire suppression
21 10 to 20 times the area now burnt would be burning
22 today?

23 A. Well, I took the per cent area of .14
24 as opposed to the 1 to 2 per cent and drew my
25 conclusions from that comparison.

1 Q. And just a last question on this
2 area, Dr. Methven. Would you agree that fire
3 suppression success is often linked to climatic
4 conditions, for example the 80s has also been, as I
5 understand it, a very dry decade?

6 A. There is no doubt about it, that the
7 weather plays a large role, yes.

8 Q. Mr. Roll, in your opinion, are there
9 any physical limitations to full-tree harvesting?

10 MR. ROLL: A. Certainly site-specific
11 situations, yes, such as slope and those kinds of
12 things, yes.

13 Q. So slope and topography can affect
14 the ability to full-tree harvest a site?

15 A. Or in fact any harvesting activities,
16 yes.

17 Q. And equipment availability can also
18 affect your ability to harvest a site in a particular
19 way?

20 A. Equipment availability in terms of
21 having equipment at your disposal to use?

22 Q. Yes.

23 A. Yes, it can.

24 Q. And in the event that based on
25 topography or equipment availability you can't

1 full-tree harvest a site, then you would have to fall
2 back to your other harvest system options; is that
3 correct, such as shortwood, tree-length, depending on
4 the species?

5 A. Not necessarily. I would suppose
6 that you had the necessary kinds of equipment, the
7 necessary training in place for your workforce and
8 those kinds of things. If all those kinds of things
9 were in place you might, yes.

10 MADAM CHAIR: Excuse me, Mr. Roll. Has
11 it been your experience -- have you come across
12 instances where you couldn't proceed with harvesting
13 because you didn't have equipment available and the
14 matters we have just been discussing?

15 MR. ROLAND: To various degrees, yes.
16 There are circumstances where, for reasons beyond our
17 control, equipment isn't available to us and, yes, it
18 limits our ability to harvest.

19 Now, to various degrees though. I can't
20 think of a circumstance where we were -- where we had
21 to, for instance, completely close down because of a
22 lack of equipment, but certainly because of the lack of
23 the equipment we have varied the size of our operation
24 until such time as we could get the appropriate
25 equipment.

1 MADAM CHAIR: And given your flexibility
2 you would move to a nearby stand?

3 MR. ROLAND: Yes, that is one of the
4 alternatives that you could have.

5 MADAM CHAIR: Thank you.

6 MS. SEABORN: Q. Moving equipment to a
7 site obviously takes some time and is cost to Industry;
8 correct?

9 MR. ROLL: A. Yes, it does.

10 Q. And would it be fair to say that in
11 advance of moving your equipment you would want to know
12 the limitations of a site in terms of topography and
13 the harvest system or the preferred harvest system to
14 be used to get the wood to roadside?

15 A. Yes, that's correct.

16 Q. And, Mr. Roll, in your opinion, what
17 information is required to make the decision as to the
18 choice of a harvest system in advance of moving your
19 equipment there?

20 A. That is quite a range of issues.
21 First of all, I guess there is all the operational
22 considerations: Whether you can physically do it,
23 whether you have in place the kind of infrastructure to
24 be able to physically move.

25 The site-specific issues though would go

1 to, and I am assuming that this would be another stand
2 that was allocated within -- and approved within that
3 year's annual work schedule, and given that that was
4 the case we would have information on its operabilty
5 from the point of view of topography and soils and
6 species and tree size and yields on that particular
7 area.

8 And I guess another consideration would
9 be the road building, road construction issues within
10 the area, whether we could physically get in there at
11 that particular time of year to construct the roads and
12 provide access to us.

13 Q. And would it be fair to say then that
14 there is a wide range of information that you would
15 want to have a look at before you actually went in and
16 harvested a site?

17 A. Yes, that's right.

18 Q. And I wanted to ask you a couple of
19 questions about Appendix B to your witness statement
20 and that is at page 85 of the witness statement.

21 A. Yes.

22 Q. And this is the generic description
23 of harvest cut layout procedures. Now, under Item 2 of
24 this procedure it says:

25 "Usually prescriptions and operating

1 layouts are transferred to an aerial
2 photo."

3 Does that apply to prescriptions for
4 normal operating areas or just prescriptions for
5 modified operations within areas of concern?

6 A. I was making specific reference to
7 prescriptions in modified areas dealing with AOCs.

8 Q. So this harvest cut layout procedure
9 that is set out is something that, in your view, is
10 typical for a layout in an AOC operation?

11 A. Actually it's typical in any area, in
12 that many of the steps are in common whether they be in
13 areas containing these areas of concern prescriptions
14 or not. The fact, you would do many of these steps
15 anyway, it would be that you would additionally ribbon
16 and identify those specific prescriptions in the case
17 of an AOC area.

18 Q. So in an area of normal operations
19 where you are not concerned about an AOC, would you
20 then essentially go through these same steps that are
21 set out in the harvest cut layout procedure?

22 A. Yes, that's right.

23 Q. Okay. Now, Mr. Roll, no doubt you
24 are aware of the evidence that has been put forward by
25 MNR that the use of full-tree logging in the area of

1 the undertaking has increased from 15 per cent to 65
2 per cent?

3 A. Yes, I am aware of it.

4 Q. And, in your opinion, do you expect
5 the use of this harvest system to continue to grow in
6 the boreal forest?

7 A. I am not sure over the range of
8 conditions and the range of -- conditions with respect
9 to availability of labour and distances from mills and
10 those kinds of things what the limit would be but,
11 yeah, I would suspect that it will continue to grow to
12 some limit.

13 Q. The Ministry of Environment has
14 recommended to the Board in its draft terms and
15 conditions that a study be carried out to assess the
16 effect of tree biomass removal on future regeneration
17 and growth.

18 MS. SEABORN: And that, Madam Chair, is
19 referred to in our terms and conditions and is also
20 referred to in the Exhibit 5A which is the Deputy
21 Minister's Agreement of May, 1988.

22 Q. Mr. Roll, would Industry be prepared
23 to participate in that study?

24 MR. ROLL: A. I can't speak for Industry
25 on that.

1 Q. Can any of the members of the panel
2 provide an answer to that? I expect silence means no?

3 MR. ROLL: A. I would think so, yes.

4 Q. If such a study -- assuming such a
5 study is carried out, Mr. Roll, would Industry be
6 prepared to accept any conclusions reached in that
7 study and, if there were any recommendations, the
8 recommendations coming out of such a study?

9 A. Yes, I think so.

10 Q. Would you agree, Mr. Roll, that if
11 all the site class 3 species that were out there and
12 were harvested did not renew to commercially viable
13 stands that there would be a significant impact on wood
14 supply?

15 A. Yes, that's right.

16 Q. Now, Dr. Methven, I believe your
17 testimony last week, or I guess the week before was
18 that full-tree harvesting can be carried out on any
19 site type; is that correct?

20 DR. METHVEN: A. That is correct.

21 Q. What scientific evidence do you reply
22 upon to say that there is no problem in full-tree
23 harvesting on any site?

24 A. If I could divide my response in two
25 parts: No. 1, within a strictly ecological context;

1 and, No. 2, within a production context. I think we
2 have to separate these two.

3 In the first case the systems out there
4 are adapted to and are used to periodic regular
5 disruptions in their nutrient dynamics, so from that
6 point of view I don't perceive the removal in full-tree
7 as being a major impact within that context. The
8 amount of nutrients carried in that full-tree is about
9 an order of magnitude less than is contained in the
10 soil.

11 If we are looking at production of timber
12 then the question becomes somewhat more complicated
13 because we are dealing with a very complex system of
14 nutrient dynamics on which we don't have a very good
15 handle; however, based on the total amount of nutrients
16 contained in soils, based on the nutrient cycling which
17 is very intense on many of these sites and very rapid,
18 based on the inputs from other sources such as
19 rainfall, dry deposition and weathering and nitrogen
20 fixation, I still don't perceive that there is a
21 problem at this point.

22 Now, my view may change on this in the
23 future.

24 Q. Are there any particular -- what I
25 want to be clear about is that in your witness

1 statement there are a number of papers that were
2 referred to in the bibliography, but is there any
3 particular scientific evidence or scientific study that
4 you rely upon for your conclusions, or is this your
5 best judgment?

6 A. No, it was from reading papers by
7 Foster and Morrison I guess, papers by Gordon, Weetman
8 and Webber to name some that are directly related to
9 Ontario.

10 Q. And after reviewing these particular
11 authors, I take it you reject their conclusions that on
12 certain sites we ought to be cautious with implementing
13 the full-tree harvest system?

14 A. I wouldn't call them conclusions, I
15 would call them speculations that there may be a
16 problem.

17 Q. I would like to have a look at the
18 Timmer document which is in Panel 10 of the MNR's
19 statement of evidence, page 465.

20 MADAM CHAIR: Is that MNR Panel 10, Ms.
21 Seaborn?

22 MS. SEABORN: Yes, MNR's Panel 10.

23 MADAM CHAIR: We don't have that.

24 MR. CASSIDY: (handed)

25 MADAM CHAIR: Thank you, Mr. Cassidy.

1 MS. SEABORN: I was going to suggest that
2 we take the break now so that you could obtain it,
3 but...

4 Q. I would like to look at page 465
5 which is the conclusions of the Timmer study.

6 Now, Dr. Methven, is it your opinion that
7 the guidelines that have been set out by these authors
8 for minimizing potential nutrient losses ought not to
9 be considered by the local forester when preparing
10 silvicultural ground rules?

11 DR. METHVEN: A. No, I would never say
12 that. These things such as these that are listed here
13 should always be considered; the question is whether
14 these recommendations can be supported by the paper
15 from which they are derived.

16 Q. And then do you reject the
17 recommendations on the basis that, in your opinion, the
18 study is flawed or reject them because you think the
19 scientists are being just too conservative?

20 A. I do have some problems with the
21 study itself, yes.

22 Q. So then it would be your position
23 then that there are some flaws in the study?

24 A. Yes.

25 Q. And what would those flaws be?

1 A. My major problem has to do with the
2 calculation of the so-called sufficiency period, I
3 believe it's Table 8.

4 Q. Yes.

5 A. The sufficiency period is calculated
6 on the basis of dividing the so-called nutrient supply
7 or reserve by the average uptake or accumulation of the
8 stands after harvest.

9 Now, my first problem is with the actual
10 nutrient reserve itself. It is based strictly on the
11 so-called exchangeable or available nutrients not on
12 total. Nearly all investigators I know provide you
13 with both; in this case you only get available or
14 exchangeable. And, of course, this chemical analysis
15 is based on all particles less than 2 millimeters in
16 size and our evidence suggests that trees can access
17 from a much larger range of absorbed particles.

18 Secondly, in this calculation that
19 nutrient reserve based on the available amounts is
20 treated as a static pool in this calculation
21 sufficiency period, but it doesn't change. In fact we
22 know it's a highly dynamic pool which depletes and is
23 continually being regenerated from the total pool of
24 nutrients and from the cycling process.

25 Third, is the -- not third, but another

1 point is the calculation of uptake or accumulation as
2 the total amount contained within the biomass at
3 harvest divided by the number of years at time of
4 harvest. This is based on the assumption that you can
5 accumulate these; in fact you can't, because up to 80
6 per cent of that stuff is continually --

7 MADAM CHAIR: Sorry, Dr. Methven.

8 DR. METHVEN: Again, up to 80 per cent of
9 those nutrients can be recycled through that period, so
10 you just can't accumulate them like that. So the
11 calculation based on the uptake and the nutrient
12 reserve as a static pool I find very, very difficult to
13 accept.

14 MS. SEABORN: Q. And would you agree
15 with me that another scientist such as yourself in
16 reviewing this study may very well say that, in his
17 opinion, the recommendations are conservative but are
18 warranted. That is possible; isn't it?

19 A. I don't think they are warranted, no,
20 but they are certainly the kind of things one should
21 always keep in mind.

22 Q. And in reviewing and looking at these
23 sorts of scientific studies and the analysis that you
24 have just given us of some of the assumptions that are
25 built into it experts are, in many instances, going to

1 have differing -- slightly differing opinions on these
2 matters?

3 A. I don't think there will be very much
4 difference of opinion in terms of the calculation and
5 use of the sufficiency period within this paper, no.

6 Q. Well, presumably Mr. Timmer and Mr.
7 Merrick would differ with you as the authors of the
8 paper?

9 A. I would have to ask them right today
10 at this point in time that question before I could
11 answer you on that one.

12 Q. Okay. Now, Dr. Methven, we have
13 spoken this morning about your definition in the
14 evidence in relation to harvest systems and in
15 particular you said that often there can easily be more
16 difference in impact within one of the systems than
17 there is between them; correct?

18 A. Yes.

19 Q. And could we turn again to the
20 interrogatory filed this morning by Forests for
21 Tomorrow, Question 29.

22 MR. CASSIDY: Would it be possible, Madam
23 Chair, to retrieve my copy of Panel 10?

24 MADAM CHAIR: Yes, Mr. Cassidy. Do I
25 have anything else of yours up here?

1 MS. SEABORN: Q. Now, in this particular
2 response we have looked at the fact that full-tree
3 harvest is an option on all of these lowland black
4 spruce sites; is that correct?

5 DR. METHVEN: A. Yes.

6 Q. And would you agree that these
7 particular sites could very well be nutrient poor
8 sites?

9 A. Nutrient poor, yes, relative to other
10 sites, yes.

11 Q. And when we look at these particular
12 silvicultural ground rules there are no restrictions or
13 considerations built into them with respect to
14 full-tree harvest in the way in which certain
15 guidelines have been set out in the Timmer report; is
16 that correct?

17 A. That's correct, yes.

18 Q. Now, Mr. Hopkins, I want to ask you a
19 few questions in relation to full-tree harvesting and
20 your case study 4D.

21 MR. HOPKINS: A. Yes.

22 Q. Now, you have said in your testimony
23 that full-tree harvesting facilitates natural
24 regeneration?

25 A. Yes, I did.

1 Q. And in response to some questions
2 from Mr. Freidin I believe you said that full-tree
3 harvest facilitates natural regeneration on lowland
4 black spruce sites; correct?

5 A. That's correct.

6 Q. And would you agree with Dr. Methven
7 that some of these sites -- that the lowland black
8 spruce sites on this particular unit could very well be
9 nutrient poor sites?

10 A. I am not an expert in nutrient levels
11 but I would -- generally from my experience what Dr.
12 Methven said is relative to other sites, and we have
13 upland rich sites and we have lowland sites that aren't
14 so productive.

15 Q. Okay. And would it be fair to say
16 that full-tree harvesting to promote natural
17 regeneration is really limited to situations where you
18 are harvesting black spruce, carrying out careful
19 logging around advanced growth?

20 A. That is the advantage to full-tree
21 logging of lowland sites, is that with selection of
22 appropriate harvesting systems you can protect the
23 advanced growth and result in renewal or regenerating
24 the site.

25 Q. And that would be the primary way in

1 which you would use full-tree harvest to promote
2 natural regeneration on these sites, using this method
3 what has been called the CLAAG method?

4 A. Well, yes, but it's very
5 site-specific, there has to be the advanced growth
6 condition there before you harvest and generally it's
7 found on lowland sites but in cases following harvest,
8 if it's not, then other regeneration methods have to be
9 used, whether it's aerial seeding or whether we site
10 prepare and plant.

11 Q. Okay. I am just looking in terms
12 though of natural regeneration, leaving aside full-tree
13 harvest followed by artificial regeneration. In terms
14 of natural regenerations, you are going to be assuming
15 the advanced growth is probably going to be there, that
16 is the way in which you are going to try and regenerate
17 that site?

18 A. That's right.

19 Q. Okay. And if we look at the
20 interrogatory response, Exhibit 1129, Question 29,
21 there is no mention for these particular lowland sites
22 in terms of an identification of full-tree harvest that
23 this would be full-tree harvest carrying out careful
24 logging around advanced growth.

25 A. Well, I think it's indicated that,

1 yes, it's full-tree harvesting using, in our case
2 today, the mechanized harvesting full-tree methods.

3 Q. Right. But in terms of the options,
4 we have again an option - take the first site, you have
5 got a wet organic, poorly drained soil site type, site
6 class 3, and the method of harvest - you have a wide
7 range of options and wouldn't it be fair to say that
8 really your option on this particular site type is
9 going to be full-tree harvest leaving it for natural
10 regeneration so you are going to be using the CLAAG
11 method?

12 A. Well, that prescription provides a
13 whole range of options and it may very well be that
14 even within a stand there is a part of the stand that,
15 yes -- because of the logging method or harvesting
16 system that, yes, you can use advanced growth as the
17 renewal method, but on the other part of the same stand
18 could very well be that there wasn't the advanced
19 growth and that you will have to renew that area by
20 another method.

21 Q. Okay. I am just following through
22 the ground rule and I am trying to look at it from the
23 point of view of someone trying to understand what are
24 the options -- the realistic options on that particular
25 site. Under the renewal treatment it says quite

1 clearly:

2 "No artificial regeneration treatment
3 leave for natural."

4 So having been educated somewhat on these
5 particular sites and looking at full-tree harvesting
6 and the fact that under your renewal treatment you are
7 not suggesting any artificial regeneration, then
8 doesn't that really drive you back to a situation with
9 this site type where you are going to be full-tree
10 harvesting for natural regeneration; that is really
11 what the option is here?

12 A. Yeah, that's true and in that
13 instance on that prescription that -- in our case today
14 we are full-tree logging with mechanized equipment and
15 if there is advanced growth that will be the renewal
16 method.

17 Q. Okay. And this particular site type
18 may very well be a nutrient poor site; correct?

19 A. Well, I am not really able to
20 determine whether a site is nutrient poor from a
21 scientific point of view but, yes, lowland sites we
22 call nutrient poor, but really it's more -- I think
23 it's more a question of drainage of water.

24 MS.. SEABORN: Madam Chair, I see it is
25 almost 10:10. I have one section left of my

1 cross-examination and I expect to be finished in half
2 an hour or so. If we could take the morning break.

3 MADAM CHAIR: All right. Let's do that
4 and we will be back at 10:30.

5 MS. SEABORN: Thank you.

6 ---Recess taken at 10:05 a.m.

7 ---On resuming at 10:30 a.m.

8 MADAM CHAIR: Please be seated.

9 MR. MacKAY: Ms. Seaborn, I had a chance
10 to check out that request.

11 MS. SEABORN: Yes.

12 MR. MacKAY: And Table 1 does seem to be
13 identical to the table in the response to the
14 interrogatory.

15 MS. SEABORN: Thank you.

16 Q. Mr. Hopkins, can we return to Exhibit
17 1129, the Forests for Tomorrow interrogatory in
18 relation to case study 4D.

19 MR. HOPKINS: A. That's question 29?

20 Q. Yes.

21 ---Discussion off the record

22 MS. SEABORN: Q. If we could look under
23 the column Silvicultural System on the second page of
24 the interrogatory response.

25 MR. HOPKINS: A. Yes.

1 Q. And I see there that there is an
2 option block or strip marketable harvest and in terms
3 of --

4 A. I'm lost here.

5 Q. The second page of the table.

6 A. Okay, I have it now.

7 Q. Under silvicultural system, block or
8 strip marketable harvest. Is that -- that's a clearcut
9 again in terms of marketable harvest?

10 A. Yes, that's correct.

11 Q. Now, with respect to the discussion
12 we had before the break regarding logging around
13 advanced growth, would you agree that in these
14 particular groundrules there is no reference to what is
15 called the CLAAG system?

16 A. That's correct.

17 Q. And is there any reason for that?

18 A. Well, it really has to do with the
19 integration of the harvesting and renewal systems that
20 have taken place since the FMA was signed in 1980 and
21 we feel that integration or the objective of the FMA
22 has led to that technique of using the harvesting
23 systems, high flotation systems, mechanized systems
24 which we saw as a way to get a better or another
25 renewal method.

1 Q. Right.

2 A. It is an evolution, it wasn't by --
3 necessarily by design. It evolved as the equipment
4 became available.

5 Q. I'm not suggesting that it's
6 inappropriate, what I'm suggesting is that these are
7 groundrules for the period 1990 to 1995, and based on
8 the information provided in your case study with
9 respect to full-tree harvest and leaving it for natural
10 regeneration, would it not be feasible on your unit to
11 identify within method of harvest that you were going
12 to be essentially carrying out the CLAAG method of
13 harvest in a similar way as the block and the strip cut
14 have been identified on the next table?

15 A. Well, as I was saying before, the
16 decision whether to -- whether the advanced growth
17 technique for regeneration is appropriate is actually
18 done on a very site-specific basis and it may fall even
19 within the site classes that are described under the
20 site description in the groundrules.

21 There can be variation on the ground and
22 basically we're treating the land, we're not treating
23 necessarily the site description that's indicated here.
24 This is -- actually, what I should do is I am not that
25 familiar with the groundrules and that sort of thing, I

1 think Mr. Gemmell in the renewal panel could probably
2 handle this whole area a lot better than I can.

3 Q. Okay. I am sure I will come back to
4 it with Mr. Gemmell, but just one more question
5 following up from your response.

6 In terms of groundrules for this site
7 description, we are in fact looking at options and
8 that's why I'm posing the question to you. In terms of
9 your options, the CLAAG is going to be, is it not, your
10 major option for full-tree harvest, leaving it for
11 natural generation on those lowlands sites?

12 A. Well, CLAAG is a name for something
13 that only makes good sense. All of our logging
14 operations are careful logging operations and if we can
15 integrate the harvesting system in order to enhance the
16 renewal effort, under the FMA there is an incentive to
17 do that and that's in fact what has taken place on our
18 operation.

19 Q. But it's a method of harvest that is
20 an option but it's not identified, is that fair, in
21 these groundrules?

22 A. What I'm saying is it's going to
23 happen naturally.

24 Q. Okay.

25 A. If at the start of 1980 it would have

1 been -- it would not have been apparent to even myself
2 that we would be able to utilize some of these
3 technique and the harvesting system would have been in
4 fact able to be integrated into some of the renewal
5 options.

6 Q. No, I understand that, but these are
7 groundrules that begin in 1990 for the period that's
8 just beginning now, and all I'm suggesting is that we
9 are setting out options in silvicultural groundrules
10 and that is clearly on this unit the major option with
11 respect to full-tree harvest and leaving it for natural
12 regeneration.

13 Would you agree with that? That's your
14 option?

15 A. It is an option that varies on a
16 site-specific basis, and although that is a part of our
17 renewal effort it's not the only one and it varies on
18 the sites that are being encountered.

19 Q. Could you turn to page 38 of the case
20 study.

21 A. Yes.

22 Q. Now, at the top of the page you talk
23 about the two critical factors which will ensure low
24 cost regeneration of the peat land sites and you talk
25 about -- and one of them being protection of advanced

1 growth and in the next paragraph you refer to current
2 operating techniques emphasize the following and under
3 item (d) the technique is lay cut trees carefully in
4 bunches, leaving as much advanced growth undisturbed as
5 possible; correct?

6 A. That's correct.

7 Q. And I note under (f) you talk about
8 using only high flotation equipment on fragile sites
9 during the frost-free season as another technique?

10 A. That's right. Fragile is referring
11 to soft.

12 Q. And all I'm suggesting is that when
13 we look at the groundrules that are set out for the
14 next five years, while we have on the second table --
15 the second page of the table an identification of block
16 or strip cuts, on the first table there is no
17 particular identification of harvesting using the
18 full-tree method to promote natural regeneration in
19 terms of cutting around advanced growth.

20 That option isn't identified in the
21 groundrules; you would agree with that? I understand
22 that your evidence is you don't think it should be, but
23 you would agree it's not there?

24 A. I'm probably not the best one to ask
25 that type of question about the groundrules. I know

1 what is in the groundrules, but I'm not familiar with
2 the rationale behind them, the silvicultural basis
3 behind them.

4 Q. Is it fair to say that based on the
5 type of equipment that's available on this particular
6 FMA that these site descriptions -- a particular site
7 description - that's No. 1 on the table: wet, organic,
8 poorly drained soils - is going to be full-tree
9 harvested based on equipment availability?

10 A. Well, presently our equipment is
11 mechanized and it is a full-tree harvesting system.
12 Yes, so that's right. That would be the method of
13 harvest on those sites in the present -- at the
14 present.

15 Q. Okay. And if turn to page 20 of your
16 case study, under Operating Practices from 1980 to the
17 Present, the last sentence of the first paragraph says
18 that:

19 "By April of 1987 there were eight
20 mechanical harvesters, feller bunchers
21 and no chain saws producing the entire
22 limit roundwood requirement."

23 What I'm suggesting is that in terms of
24 your options, haven't you limited your flexibility when
25 you are choosing to apply a particular groundrule based

1 on the equipment that you have? Isn't that a fact of
2 life?

3 A. No, I think the trend is exactly what
4 has happened in our case where as you progress through
5 time and new developments and technology and equipment
6 and techniques become available, if they will meet the
7 objectives of the renewal and harvesting you tend to
8 move towards that.

9 You don't sit here in a certain period of
10 time and do it the other way and say: We think the
11 full -- we think that wide tires are the only thing
12 that should be used on a certain site and then limit
13 yourself in the future that there would be no
14 developments, for instance, the wide tracks on the
15 clambunk skidders that are very appropriate for our
16 sites.

17 Q. I'm not suggesting that you should
18 limit any innovation, Mr. Hopkins, what I'm suggesting
19 is that we have heard quite quite bit of evidence
20 throughout this hearing that equipment is expensive,
21 equipment is expensive to purchase, expensive to move,
22 it's expensive to develop new technologies, these
23 groundrules are only put forward for a five-year
24 period.

25 We are not talking about groundrules that

1 are going to tie you down for a period any longer than
2 five years, and what I'm saying is that from a
3 practical standpoint, based on the equipment you now
4 have on this particular unit, you are going to be
5 primarily full-tree harvesting?

6 A. Yes, but that can change at any time.

7 Q. Okay. But that is what you're going
8 to be doing in the foresee future. Unless an
9 innovation comes in or a new piece of equipment comes
10 on stream you are going to -- that's a practical
11 reality, you are going to be full-tree harvesting?

12 A. Yes, but as I said, we did change.
13 Like, we have a case in our instance where we did
14 change considerably within a five-year period. So what
15 was felt to be the foreseeable future at the start of
16 the five-year period didn't end up to be the reality at
17 the end of the five-year period.

18 Q. Okay. Would you agree that
19 generally, more often than not, full-tree harvesting of
20 conifers is followed by artificial regeneration?

21 A. On the appropriate sites. In our
22 case, upland sites are regenerated artificially.

23 Q. Okay. And would you agree that on
24 certain sites full-tree logging does not promote
25 natural regeneration?

1 A. I would say that it -- in those
2 sites, particularly, as I say, on upland sites in our
3 case, it wouldn't matter which way you harvested.
4 Whether it's full-tree or tree-length you would have to
5 do some sort of artificial regeneration technique.

6 MS. SEABORN: Excuse me for a moment.

7 Q. I'm looking at an example in terms of
8 full-tree harvesting from the spruce guidelines, page
9 42. It's Exhibit 382.

10 MR. HOPKINS: A. Is that the
11 Silvicultural Guide for the Spruce Working Group?

12 Q. Page 42 of Exhibit 382.

13 A. Yes, I have it.

14 Q. And the last paragraph on page 42
15 says:

16 "Full-tree harvesting on very shallow
17 soils with marginal fertility may effect
18 regeneration since slash removal
19 exposes the ground surface to excessive
20 heating and drying and should
21 therefore be discouraged."

22 And would you accept that that may be a
23 site where full-tree harvesting should not be
24 undertaken based on the spruce guidelines?

25 A. I wouldn't have any technical

1 qualifications that would let me answer that question.

2 Q. Okay. And would you agree that for
3 jack pine areas that are not full-tree logged -- sorry,
4 for jack pine areas that are full-tree logged are not
5 suitable for natural regeneration; would you agree with
6 that?

7 A. Would you repeat that again, please?

8 Q. For jack pine, if you are going to
9 full-tree log a site, that is not a site that you would
10 leave for natural regeneration?

11 A. Well, it would depend on the sites.
12 In our case, we have done both methods on jack pine
13 sites, which we don't have very many of anyway, that we
14 full-tree logged and done site preparation and planted
15 and then some we full-tree logged and it didn't require
16 site preparation so we just planted directly.

17 Q. Okay. I'm referring to natural
18 regeneration, though.

19 A. We don't use a natural regeneration
20 technique for pine in our area, but it's very specific
21 to our area in the Clay Belt.

22 MS. SEABORN: I would like to introduce
23 as the next exhibit an excerpt from the Jack Pine
24 Silvicultural Guides. (handled)

25 MADAM CHAIR: Thank you.

1 MR. CASSIDY: Is that Exhibit 1130, Madam
2 Chair?

3 MADAM CHAIR: Yes, that's Exhibit 1130.

4 ---EXHIBIT NO. 1130: Excerpt from the Jack Pine
5 Silvicultural Guides.

6 MS. SEABORN: Q. If we turn to the third
7 page of the excerpt under the heading Natural
8 Regeneration it says that:

9 "Its success depends on viable seed
10 from the previous stand being available;
11 therefore, areas that are full-tree
12 logged are not suitable. Natural
13 regeneration eliminates the use of any
14 improved seed."

15 Now, based on the statement in the Jack
16 Pine Silvicultural Guides, would you agree that for
17 jack pine areas that are full-tree logged are not
18 suitable for natural regeneration?

19 MR. HOPKINS: A. Well, I'm not the right
20 person on this panel to answer that, but the next
21 sentence indicates what I was talking about:

22 "The MNR Northern and Northeastern
23 Regions..." and the northeast is where I
24 am talking about, the Clay Belt,

25 "...have had little success with natural

1 regeneration."

2 And that's whether it's full-tree or
3 tree-length. But I think as far as dealing with jack
4 pine, there are other people on the panel that are more
5 capable of answering the question than I am.

6 Q. Okay. Would anyone else on the panel
7 dispute that generally full-tree logging is not
8 suitable for natural regeneration of jack pine sites.

9 Mr. Roll, you've had some experience in
10 this area.

11 MR. ROLL: A. Perhaps I can help. I
12 think there are situations where there is enough seed
13 left on site. It does depend, though, as it says, on
14 providing the suitable seedbed.

15 In our case study - and Mr. Ferguson will
16 speak further to this in the renewal panel - we deal
17 with a jack pine site that was tree-length logged and
18 in Mr. Ferguson's opinion at that time there was some
19 doubt even with tree-length logging that there was
20 enough viable seed on the site that would reach
21 appropriate mineral soil in order to germinate.

22 So I would agree, yes, that full-tree
23 logging is generally not appropriate for natural;
24 however, that's not limited to full-tree.

25 Q. Mr. Hopkins, looking again at the

1 interrogatory response, Exhibit 1129.

2 MR. HOPKINS: A. You will have to give
3 me a hand to find that. What title is it?

4 Q. This is FFT's question 29, the one
5 with the two-page groundrules we were just looking at.

6 A. Okay.

7 Q. Now under the Renewal Prescription
8 for the first site description there is a reference to
9 no retreatment. Do you see that?

10 A. Yes, I do.

11 Q. And based on the fact that this is a
12 site class 3 site description and it says no
13 retreatment, does this mean that if the renewal
14 treatment fails; i.e., the natural regeneration, the
15 company will not have to retreat at its own expense?

16 A. I can't answer that question.

17 Q. Can anyone on the panel answer that?

18 Mr. Roll?

19 MR. ROLL: A. (nodding negatively)

20 MR. CASSIDY: I am not stating that Mr.
21 Gemmell can answer that question, but my friend is free
22 to ask Mr. Gemmell that question in the next panel.

23 MS. SEABORN: Thank you, Mr. Cassidy.

24 MS. SEABORN: Thank you members of the
25 panel, Board. That completes my cross-examination.

1 MADAM CHAIR: Thank you, Ms. Seaborn.

2 Mr. Cassidy, are you prepared to proceed
3 with re-examination?

4 MR. CASSIDY: Yes, I am, Madam Chair.
5 I anticipate about 15 minutes.

6 MADAM CHAIR: Thank you.

7 REDIRECT EXAMINATION BY MR. CASSIDY:

8 Q. I would like to turn to you first,
9 Dr. Methven, and I would like to ask you if the
10 differences that you discussed with Ms. Swenarchuk in
11 your evidence on April 15th on fire versus harvest and
12 specifically clearcutting, if those differences that
13 you discussed change in any way the opinion you
14 expressed in evidence on April 17th that the clearcut
15 silvicultural system is appropriate for regenerating
16 the boreal forest of Ontario?

17 DR. METHVEN: A. No, it does not.

18 Q. Thank you. Dr. Methven, continuing
19 with you. At page 34,369 of the transcript, in
20 response to Ms. Swenarchuk's questions you indicated
21 that you regard the primary business -- of business is
22 to stay in business and in the context of this
23 industry, the forest industry, does your view relate to
24 Mr. Roll's evidence that Industry's desire is to
25 maintain site viability and renew the timber resource?

1 A. That is required for maintaining
2 long-term business, yes.

3 Q. And I would like to stay with you for
4 a minute, Dr. Methven. Ms. Swenarchuk asked you
5 several questions about micro-climate differences
6 within a clearcut. Is it your evidence that once you
7 get beyond the area shaded by the remaining standing
8 timber that there are no significant micro-climate
9 differences that will impact negatively on the
10 regeneration of the cut-over?

11 A. That is my position, yes.

12 Q. So is it your evidence then that
13 regeneration prospects are not reduced significantly as
14 you move further away from the edge of a cut-over?

15 A. If terms of survival of seedlings,
16 yes.

17 Q. Now, I would like to turn to you, Mr.
18 Roll. You were cross-examined -- I'm sorry, Dr.
19 Methven was cross-examined by Mr. Hanna at page 34,538
20 of the transcript on April 19th to the effect that
21 aesthetic qualities are a concern in harvesting.

22 And I would like to ask you, Mr. Roll, is
23 it the case that the tourism guidelines which are
24 Exhibit 379 contain provisions for addressing
25 aesthetics in timber management?

1 MR. ROLL: A. Yes, they do.

2 Q. And I would like to come back to you,
3 Dr. Methven, in respect of a question asked of you this
4 morning by Ms. Seaborn and the response you gave was
5 that it is dangerous to calculate a fire cycle on the
6 basis of a single decade, and I would like to ask you
7 why you have that opinion?

8 DR. METHVEN: A. Because fire occurrence
9 over time tends to be highly variable from decade to
10 decade and from century to century, so we have to be
11 careful because there are large blips in the system and
12 we have to be clear that what we are looking at at any
13 one point in time may just be one of those blips and
14 over the long term they may smooth out.

15 Q. Is it, therefore, inappropriate in
16 your view to extrapolate on fire cycles based on a
17 single decade?

18 A. Yes.

19 Q. And finally, Mr. Roll, I would like
20 to go back to the cut layout described in Appendix B of
21 Exhibit 1121, the generic description of a cut layout.

22 Can you tell me, is that layout done at
23 the five-year level, at the five-year stage?

24 MR. ROLL: A. No, it's not.

25 Q. When is it typically done?

1 A. It's done during the year of
2 operation.

3 MR. CASSIDY: If I could just have a
4 minute, Madam Chair.

5 Those are my questions in re-examination.

6 MADAM CHAIR: Thank you very much, Mr.
7 Cassidy.

8 Thank you very much panel members. The
9 Board appreciates all your participation in the
10 hearing. Thank you.

11 MR. CASSIDY: I would like to thank the
12 panel members for agreeing to cooperate and come back
13 this week. It I think helped out counsel involved in
14 this matter, so I would like to thank them.

15 Thank you, Madam Chair.

16 MADAM CHAIR: And you are excused. Thank
17 you.

18 ---(panel withdraws)

19 MADAM CHAIR: Mr. Cassidy, are we coming
20 back to do some of the direct examination of Panel 7?

21 MR. CASSIDY: Yes, that will commence
22 this afternoon, Madam Chair. As I have not had an
23 opportunity to speak to Ms. Cronk, I am
24 operating on the assumption that Dean Carrow is winging
25 his way here and will be available commencing at 12

1 o'clock if you wish to commence then.

2 I have not had an opportunity to confirm
3 that with Ms. Cronk, it might be -- we are in the
4 Board's hands in term of when you wish to start. I
5 know it could not be earlier than twelve based on my
6 last discussion with her and I don't know whether he
7 has in fact arrived in town yet.

8 MADAM CHAIR: I think we will stick to
9 our schedule starting at 1:30.

10 MR. CASSIDY: 1:30?

11 MADAM CHAIR: Yes.

12 MR. CASSIDY: Thank you very much. If
13 there is a problem in the interim I will immediately
14 advise Ms. Devaul.

15 You know, with flight schedules the way
16 they are. I know that we were concerned at one time
17 about flight schedules with respect to Dean Carrow, but
18 our information is that -- at least the information I
19 had last night is that he is on his way.

20 MADAM CHAIR: And is it just Dean Carrow
21 whose evidence we will be hearing this afternoon?

22 MR. CASSIDY: My understanding from
23 speaking to Ms. Cronk is that Dean Carrow's evidence
24 will be given, as well as the evidence of three of the
25 case study witnesses which should take up the full day

1 today.

2 MADAM CHAIR: And we are scoping for
3 Panel 8 this evening?

4 MR. CASSIDY: That's correct. Madam
5 Chair, there is one another scheduling matter that
6 comes to mind - and perhaps Ms. Seaborn can address
7 this as well - and that is the discussion which is
8 scheduled to be held tomorrow with regard to terms and
9 conditions.

10 Since we are not going to be sitting
11 tomorrow, I don't know whether that discussion was
12 scheduled to be held at 5 o'clock, I assume it was. I
13 am obviously in our hands as to when you wish to have
14 that discussion. Whether you wish to have it at five
15 or whether you wish to come back earlier in the day.

16 MADAM CHAIR: We have scheduled it for
17 five. We will have to check with Ms. Devaul to see if
18 any other parties -- I understand Mr. Colborne wants to
19 make a submission.

20 MR. CASSIDY: And, therefore, may be
21 operating on the assumption that it is 5 o'clock.

22 Ms. Seaborn, we are having that
23 discussion?

24 MS. SEABORN: Yes, I understood it was
25 going to be tomorrow. I'm not sure if anyone other

1 than Mr. Colborne had been planning on attending. I
2 think with the scheduling change Mr. Castrilli will not
3 be here nor will anyone on behalf of Forests for
4 Tomorrow at least before Thursday morning.

5 MADAM CHAIR: Shall we reschedule it for
6 next week? I mean, what's the point of having the
7 discussion and then having to repeat it.

8 MR. CASSIDY: I agree. The only concern
9 I would have is that -- obviously we can get to Mr.
10 Colborne and tell him that he need not appear at 5
11 o'clock but there may be other parties who may be
12 journeying to Thunder Bay for this purpose.

13 I have no information on that whatsoever
14 and it might be kind of difficult for them to show up
15 and not have at least the Board available to hear them.

16 MADAM CHAIR: As Mr. Martel pointed out,
17 Mr. Colborne probably won't come to Toronto for the
18 discussion.

19 Well, what are we going to be hearing
20 essentially, Mr. Freidin or Ms. Seaborn?

21 MR. FREIDIN: I am not the proper person
22 to speak to on that, Ms. Murphy has been dealing with
23 that.

24 MADAM CHAIR: Could you talk to her over
25 lunch and find out what the format would be? Are we

1 being presented with a written document or...?

2 If Mr. Colborne has something to say,
3 regardless of what the submission is, perhaps we would
4 come together tomorrow night and hear what he has to
5 say.

6 MR. FREIDIN: All right. Why don't I
7 speak to Ms. Murphy and she may find that she may think
8 it appropriate for her to show up at 1:30 and suggest a
9 new proposal. That may be an accurate conduit.

10 MADAM CHAIR: Thank you.

11 MR. CASSIDY: We would never want that,
12 Mr. Freidin.

13 1:30 then, Madam Chair?

14 MADAM CHAIR: Yes. Thank you.

15 ---Luncheon recess taken at 11:00 a.m.

16 ---On resuming at 1:30 p.m.

17 MADAM CHAIR: Please be seated.

18 Hello, Ms. Murphy.

19 MS. MURPHY: Hello.

20 MADAM CHAIR: We received your note on
21 the filing of final terms and conditions.

22 MS. MURPHY: I understood that you --

23 MADAM CHAIR: No, excuse me, this is from
24 Ms. Swenarchuk.

25 MS. MURPHY: Yes. I understood that you

1 did have some enquiry about that and I thought I would
2 take one minute to advise that I have spoken to all of
3 the parties who were involved in negotiations.

4 I hope by the -- I am waiting one more
5 confirmation telephone call. I hope by the end of the
6 day to be able to file with the Board the position that
7 has been taken by all parties. We are essentially in
8 agreement, however, I should advise that Mr. Colborne
9 would still like to make submissions. So I would
10 suggest that we still put that matter on tomorrow, but
11 I would suggest you won't need very much time.

12 MADAM CHAIR: All right, that's fine.
13 Then we will meet here at five o'clock tomorrow night
14 to hear Mr. Colborne on this issue.

15 MS. MURPHY: All right, that's fine.

16 MADAM CHAIR: Thank you.

17 Mr. Cassidy?

18 MR. CASSIDY: Madam Chair, I have not had
19 the benefit of seeing the note that Ms. Swenarchuk
20 filed. If I might have a copy of that, I'd appreciate
21 it. I can get it from Ms. Devaul after --

22 MADAM CHAIR: We just received it,
23 certainly.

24 MR. CASSIDY: All right, thank you.

25 MADAM CHAIR: Ms. Cronk?

1 MS. CRONK: Thank you, Madam Chair, Mr.
2 Martel.

3 I should perhaps address first the issue
4 of the location of the hearing next week for the
5 renewal panel. We were successful in reaching most of
6 the witnesses scheduled to testify on the Industry's
7 renewal panel, save one, and I think it's safe to say
8 that from the Industry's perspective we are content and
9 it seems physically possible to have all of the
10 witnesses in Toronto next week.

11 So that if it was the Board's inclination
12 in the circumstances to move to Toronto next week and
13 to sit, as you indicated, Tuesday, Wednesday and
14 Thursday we are agreeable to that and we will make
15 appropriate arrangements.

16 MADAM CHAIR: Do any of the parties here
17 have an objection to that.

18 Mr. Freidin or Ms. Seaborn?

19 (no response)

20 All right. Then, why don't we do that.
21 Apparently we will be sitting in our Board room.

22 MS. CRONK: Thank you.

23 MADAM CHAIR: We tried to get the Energy
24 Board hearing room but we couldn't. Just next week,
25 that's right, we will move to 151 Bloor Street a week--

1 MS. CRONK: On May 14th.

2 MADAM CHAIR: --a week Tuesday. And I
3 would ask the parties in this case, because we will be
4 in Toronto sitting next Tuesday, if they could give Ms.
5 Devaul a list of the exhibits they will need to
6 cross-examine Panel 8. Will we be in the
7 cross-examination of Panel 8 next week?

8 MS. CRONK: It would be my hope that we
9 could actually complete the evidence next week, but I
10 won't know until the scoping session this evening.

11 MADAM CHAIR: We are in the process of
12 moving things back and forth, so Ms. Devaul will have
13 to have a list of the exhibits she will need in order
14 for us to be prepared for next week.

15 MS. CRONK: We will provide that in terms
16 of the direct evidence as soon as possible.

17 MADAM CHAIR: All right. Thank you very
18 much.

19 MS. CRONK: And could the Board assist us
20 then as to the start time Tuesday next in Toronto?

21 MADAM CHAIR: I think we will be sitting
22 as we do here from 8:30 to 5:00.

23 MS. CRONK: Thank you.

24 MR. FREIDIN: Does that mean that this is
25 our last week in Thunder Bay, Madam Chair?

1 MADAM CHAIR: I think so.

2 MR. FREIDIN: We can say our fond
3 good-byes to everybody before we leave.

4 MADAM CHAIR: You can have your last meal
5 at Giorg's, Mr. Freidin.

6 MS. CRONK: Some things do get out.

7 Madam Chair, Mr. Martel, if I could turn
8 then to the next panel of witnesses to testify on
9 behalf of the OFIA/OLMA. As you are of course aware
10 they are Panel 7 and they will be dealing in their
11 evidence with tending and protection of the timber
12 resource.

13 I wish to make a number of brief opening
14 remarks and, for the assistance of the Board, to
15 introduce you to the panel members and to indicate how
16 the evidence in light of the scheduling difficulties
17 this week has been restructured and the evidence that
18 you will be hearing today.

19 As the Board is aware, two witnesses are
20 unable to be with us today and will be with us all -- I
21 hope that they will be with us on May 14th in Toronto.
22 If I could start by introducing the remaining members
23 of the panel.

24 And closest to the Board on your far
25 right is Dr. Dean Roderick Carrow. Dean Carrow, as you

1 will hear in evidence, is currently a Professor and
2 Dean of the Faculty of Forestry at the University of
3 Toronto, a position he has held since 1985.

4 For your assistance his resume appears
5 beginning at page 22 of the Panel 7 statement of
6 evidence but very briefly I wish for the assistance of
7 the Board to indicate that Dr. Carrow is a professional
8 forester, he holds a Ph.D. in entomology as well
9 conferred by Cornell University in 1971. He obtained
10 his forestry degree from the University of Toronto in
11 1961. He is in our submission, as the evidence will
12 indicate, an acknowledged Canadian expert in forestry
13 and entomology including particularly in the use of
14 insecticides.

15 He has held a number of positions
16 relevant to his evidence in this case prior to becoming
17 Dean, among them: From the years 1982 to 1985 he was
18 Assistant Deputy Minister of the Department of Natural
19 Resources in New Brunswick; from 1972 to 1982 he was
20 Supervisor of the Pest Control Section of the Ministry
21 of Natural Resources, and the balance of the positions
22 held by him are detailed in his resume.

23 He has extensive teaching experience and
24 scientific experience including in the area of original
25 research in such areas as forest entomology, natural

1 resource management and the use of pesticides in timber
2 management. He's published extensively in these and
3 other timber management related areas and, as I
4 indicated, has conducted original research in these
5 fields as well.

6 I felt it would be of assistance to the
7 Board to point out that among the numerous professional
8 positions that Dean Carrow has held are numbered the
9 following: He is the former Chairman of the Canadian
10 Council of Resource and Environment Ministers' Task
11 Force on Pesticides in Forest Management, known as
12 CCREM; he is the former President of the Canadian
13 Institute of Forestry, he was a member of the task
14 force that drafted the National Forest Sector Strategy;
15 he is a member of the current Federal Pesticide
16 Registration Review being conducted under the auspices
17 of Agriculture Canada; he is a former member of the
18 Ontario Pesticides Advisory Committee and the research
19 subcommittee of that group.

20 His evidence at this hearing, for your
21 assistance, will relate to the following issues. He
22 will give evidence regarding the need for protection as
23 distinct from tending of the timber resource; it will
24 be his evidence that the use of authorized insecticides
25 including chemical and biological insecticides in

1 protection activities is essential and an effective
2 part of a sound timber management program. It will be
3 his evidence, therefore, that the current provincial
4 ban on the use of chemical insecticides is, for the
5 reasons he will outline, inappropriate and should be
6 discontinued.

7 He will also testify regarding the need
8 for research and development and registration of
9 additional insect control agents both biological and
10 chemical and further, when this panel's evidence
11 resumes in the week of May 14th, he will be giving
12 evidence concerning certain terms and conditions
13 proposed by the Industry with respect specifically to
14 protection activities.

15 And with respect then to the other
16 members of the panel, if I could turn next very briefly
17 to Messrs. Tomchick, Bunce, Ferguson and Stanclik. All
18 of these witnesses are Industry representatives before
19 you appearing on behalf different Industry companies.

20 Starting first if I could with Mr.
21 Tomchick on Dean Carrow's right. He obtained his
22 degree in forestry from the University of Toronto in
23 1978. He is, therefore, a professional forester. He
24 currently holds the position of Chief Forester, Quebec
25 and Ontario Paper Company Limited.

1 Until recently he was directly
2 responsible for the supervision of tending activities
3 and responsible for co-ordinating timber management
4 practices including tending on two of his company's
5 management units in the province. Recently he assumed
6 new duties with the same company as Chief Forester
7 which focus now on long-term forest management strategy
8 and timber management planning.

9 His evidence here will concern two
10 issues: First, the need for research, development and
11 registration of additional herbicides and; secondly,
12 terms and conditions proposed by the OFIA/OLMA
13 regarding tending activities.

14 Turning next to Mr. Bunce, he too is a
15 professional forester having obtained his degree in
16 1979 from Lakehead University here in Thunder Bay. Six
17 years earlier he qualified as a forest technician at
18 Sir Stanford Fleming College in Lindsay, Ontario. He
19 holds - as I should have pointed out does Mr.
20 Tomchick - a number of certificates and licences
21 relating to the use in timber management of herbicides.

22 He is currently management forester for
23 E.B. Eddy Forest Products Limited in Espanola, a
24 position he has held since 1979, and he is responsible
25 for timber management programs and associated planning

1 on one of E.B. Eddy's FMA areas including tending
2 activities. The FMA at issue in particular is the
3 Lower Spanish Forest FMA.

4 He will be giving evidence before you on
5 the tending activities described in E.B. Eddy's case
6 study, that is case study 4B, and you will hear in his
7 evidence that he was directly involved in the tending
8 activities at the time the case study was carried out.
9 It is related to the Upper Spanish River forest
10 management agreement and he was directly involved in
11 those activities.

12 He will be giving evidence concerning the
13 operational tending practices and the experience on
14 E.B. Eddy's FMA areas in that regard.

15 Turning next to Mr. Ferguson, he too is a
16 professional forester having obtained his degree in
17 1974 from the University of Toronto. He is employed by
18 Canadian Pacific Forest Products Limited in Ignace,
19 Ontario as management forester in that company and
20 previously as planning and control superintendent.

21 He is responsible for all timber
22 management activities and associated planning on the
23 English River Forest including tending activities and
24 he, like Messrs. Bunce and Tomchick, holds a number of
25 certificates and licences regarding the use of

1 herbicides in timber management in Ontario.

2 His evidence will be directed to the
3 tending activities and decisions contained in the
4 Canadian Pacific Forest Products Limited case study No.
5 4A and, as well, will concern the operational tending
6 practices and experience of his company on the English
7 River Forest.

8 Turning last, but certainly not least, to
9 Mr. Stanclik, he too is a professional forester having
10 obtained his degree in 1974 from the University of
11 Toronto. He is currently employed by Abitibi-Price
12 Inc., Iroquois Falls, again as management forester for
13 the Iroquois Falls Forest, a position he has held for
14 the last five years.

15 In that position he directs timber
16 management activities and planning for the Iroquois
17 Falls Forest FMA including tending and, as you might
18 anticipate - in the way that the structure of this
19 evidence has been set out - Mr. Stanclik will be giving
20 evidence concerning the tending activities described in
21 the Abitibi-Price Inc. Iroquois Falls case study, case
22 study 4D.

23 He will as well be giving evidence
24 concerning operational tending practices and experience
25 on the Iroquois Falls Forest FMA. And finally, in Mr.

1 Stanclik's case, he will be giving evidence before the
2 Board regarding the extent and nature of the use of
3 herbicides by the Industry in the area of the
4 undertaking.

5 Dr. McCormack, when he joins us, will be
6 giving evidence regarding the following sections of the
7 statement of evidence as they are going to be, to the
8 extent that they will be dealt with orally.

9 For your assistance, Madam Chair, they
10 are Sections 1, relating to the need for tending in
11 forestry including in particular the area of the
12 undertaking; Section 2, relating to the choice among
13 tending alternatives; Section 3, regarding the need for
14 flexibility and management alternatives in tending
15 operations; Section 4, regarding the need for the use
16 of herbicides as a particular form of tending measure
17 and the appropriateness of their use; Section 5,
18 regarding the need for research and development and
19 registration of additional herbicides and, finally,
20 Section 9, regarding the benefits of the use of
21 herbicides in timber management.

22 And I should point out, Madam Chair, Mr.
23 Martel, that Mr. Smith who is not able to be with us
24 today is employed by Abitibi-Price Inc. Lakehead
25 Division and he will, when before you, give evidence

1 concerning the tending activities described in case
2 study 4C, the Abitibi-Price, Lakehead Division case
3 study concerning its FMA lands or part thereof.

4 Finally, you will recall Mr. Martel,
5 Madam Chair, that on Panel 4 the case study overview
6 panel another witness appeared before you, Mr. Peter
7 Murray, as he has subsequently on other panels. It was
8 his evidence -- his evidence at that time was directed
9 to case study 4E relating to the Great Lakes/St.
10 Lawrence Forest region and, in particular, to the hard
11 maple tolerant hardwood cover type.

12 It was Mr. Murray's evidence in the
13 overview panel that tending activities in that case
14 study formed an integral part of the harvesting
15 operations carried out under the selection system of
16 management and that tending per se, as that term and
17 activity is known in the boreal forest, did not form
18 part of his case study.

19 That being the case, it is not intended
20 that he form part of this panel or testify regarding
21 the tending activities in case study 4E in any greater
22 detail, but he will be a member of the Industry's panel
23 8 on renewal and if any parties have any questions
24 specific to tending issues relating to his case study
25 they can be dealt with at that time.

1 That Mr. Martel, and, Madam Chair, is an
2 outline of the areas of expertise of these witnesses
3 and I would ask that they be accepted, in the case of
4 the Industry witnesses, as experts in tending
5 activities and in the use of herbicides in timber
6 management in the area of their cover types in the area
7 of the undertaking.

8 And in the case of Dean Carrow, I would
9 ask that he be accepted by you as an expert in the use
10 of insecticides and in protection activities and in the
11 disciplines of both forestry and entomology for those
12 purposes.

13 And I would ask that the witnesses now be
14 sworn.

15 MADAM CHAIR: Would the witnesses who
16 wish to be sworn approach us, please, and if anyone
17 wishes to be affirmed you may stay in your seat.

18 GEORGE STANCLIK,
19 MURRAY FERGUSON,
20 PHILIP BUNCE,
21 ROBERT TOMCHICK,
22 RODERICK CARROW, Sworn
23 PETER MURRAY, Recalled

24 MS. CRONK: Madam Chair, if I could file
25 at this time a number of documents. First, two extra
26 copies of the tending and protection statement of
27 evidence Panel 7 on behalf of the OFIA/OLMA, and I

1 would ask that be given the next exhibit number.

2 MADAM CHAIR: That's Exhibit 1131.

3 MS. CRONK: 1131?

4 MADAM CHAIR: Yes.

5 MS. CRONK: Thank you.

6 ---EXHIBIT NO. 1131: Statement of Evidence, OFIA/OLMA
7 Panel No. 7.

8 MS. CRONK: I would next seek leave to
9 file three copies of a letter dated April 25th, 1990,
10 madam Chair, which --

11 MADAM CHAIR: That's exhibit -- sorry,
12 Ms. Cronk.

13 MS. CRONK: --which deals with a number
14 of matters. For the assistance of the Board it
15 first -- this was a letter delivered by our offices to
16 all full-time parties according to the latest full-time
17 parties list, and it included supplementary materials
18 to be referred to by Dean Carrow; namely, a list of
19 photographs and a photocopy of the photographs, slides
20 to which Dean Carrow will be referring.

21 It also enclosed copies of overheads to
22 which Dr. McCormack will be referring. It included as
23 well copies of overheads to which Messrs. Bunce and
24 Ferguson will be referring, and it detailed certain
25 errata to be made to the Panel 7 statement of evidence

1 based on a review by the witnesses for typographical
2 errors and any other errata that should be noted prior
3 to giving their evidence.

4 And I should point out for the benefit of
5 the Board, with respect to the errata section of the
6 letter - I am going to suggest, Madam Chair, that this
7 be filed as a bundle as the next exhibit - that a
8 number of tables of statistics in Panel 7 have been
9 amended in accordance with the errata and they are
10 detailed in the letter of April 25th. They pertain to
11 Tables 1, 2, 4-7 and Table 8.

12 Dr. McCormack will be dealing with Table
13 8, Mr. Stanclik in his later evidence during the week
14 of May 14th with the revisions to the other tables.
15 And I would ask, Madam Chair, that this be marked as
16 the next exhibit.

17 MADAM CHAIR: That's Exhibit 1132.

18 MS. CRONK: Thank you. (handed)

19 ---EXHIBIT NO. 1132: Letter dated April 25, 1990 with
20 supplementary materials to be
21 referred to by Messrs. Stanclik,
Bunce, Ferguson, Carrow and
McCormack, and errata.

22 MS. CRONK: I sould note, Madam Chair, if
23 it will be of assistance to the Board we have made
24 extra copies for the Board members of the revised
25 tables and over the break, or at the end of the day -

1 if you wish us to do so - we will clip those into your
2 current copy of Panel 7 so that you have the current
3 tables with you, if that would be of some help.

4 MADAM CHAIR: Thank you, it would be.

5 Do you have another copy, Ms. Cronk?

6 MS. CRONK: (handed)

7 MADAM CHAIR: Thank you.

8 MS. CRONK: The next document that I
9 would ask to file, Madam Chair, is a letter dated April
10 27th, 1990 again from our firm to all full-time
11 parties, in this instance enclosing copies of overheads
12 to be referred to by Messrs. Tomchick and Stanclik in
13 their evidence.

14 MADAM CHAIR: Exhibit 1133.

15 MS. CRONK: (handed)

16 MADAM CHAIR: Thank you.

17 ---EXHIBIT NO. 1133: Letter dated April 27, 1990
18 enclosing copies of overheads to
19 be referred to by Messrs.
Tomchick and Stanclik.

20 MS. CRONK: The next materials, Madam
21 Chair, are two original copies of the photographs or
22 slides to be referred to by Dr. McCormack and by Dean
23 Carrow during the course of their evidence. The book
24 is divided into two sections; the first pertaining to
25 Dean Carrow, the second pertaining to Dr. McCormack and

1 I would ask that that be marked as the next exhibit.

2 MADAM CHAIR: That is Exhibit 1134.

3 ---EXHIBIT NO. 1134: Book of original photographs or
4 slides to be referred to by Dr.
McCormack and Dean Carrow.

5 MS. CRONK: (handed)

6 MADAM CHAIR: Thank you.

7 MR. MARTEL: Thank you.

8 MS. CRONK: The next document, Madam
9 Chair, are copies of a letter dated April 2nd, 1990,
10 again from our firm to all full-time parties, this time
11 enclosing a revised version of Appendix B to the Panel
12 7 statement of evidence.

13 Appendix B is a list of the photographs,
14 slides to be referred to by Dr. McCormack in his
15 evidence and a number was missed, throwing out all the
16 rest of the references, so we had the table retyped and
17 provided the parties with a copy of the photographs.

18 So I would like to distribute that to the
19 Board. (handed)

20 MADAM CHAIR: Exhibit 1135.

21 ---EXHIBIT NO. 1135: Letter dated April 2, 1990
22 enclosing revised version of
Appendix B to Panel 7 statement
23 of evidence.

24 MS. CRONK: And finally at this point in
25 time, Madam Chair, I would like to file a number of

1 interrogatories that were received by the OFIA/OLMA
2 with respect to Panel 7 and the responses delivered in
3 respect of them.

4 For the record they are: MNR
5 Interrogatories 3, 4, 7, 8, and 12; MOE interrogatories
6 1 and 4; Forests for Tomorrow Interrogatories 6 and 11;
7 and NAN Interrogatories 3, 5, and 7.

8 And I would ask that this collectively be
9 marked as the next exhibit.

10 MADAM CHAIR: Exhibit 1136.

11 MS. CRONK: (handed)

12 MADAM CHAIR: Thank you.

13 ---EXHIBIT NO. 1136: Package of Interrogatory
14 Questions and Responses re
OFIA/OLMA Panel 7:
15 MNR No. 3, 4, 7, 8 and 12;
MOE No. 1 and 4;
16 FFT No. 6 and 11;
NAN No. 3, 5 and 7.

17 MS. CRONK: That completes the materials
18 to be filed at this time, Madam Chair.

19 DIRECT EXAMINATION BY MS. CRONK:

20 Q. And to begin the evidence of this
21 panel I would like to turn, Mr. Stanclik, if I could to
22 you.

23 I understand that you will be outlining
24 to the Board by way of introductory evidence the
25 various positions taken by the Industry relating to

1 tending and protection activities that will then be
2 dealt with in subsequent evidence by yourself and other
3 members of the panel; is that correct?

4 MR. STANCLIK: A. Yes, that's correct,
5 Ms. Cronk.

6 Q. All right. Could you proceed then to
7 do so.

8 A. Madam Chair, the Industry will be
9 presenting its evidence on Panel 7 based on the eight
10 position statements that will be found starting on page
11 3 the executive summary in the statement of evidence.
12 I will present an overview of these position statements
13 using a set of three overheads.

14 As I go through the eight position
15 statements I will identify which witnesses will be
16 presenting the evidence to the Board for each position
17 statement or group of statements.

18 Q. Mr. Stanclik, I am not sure that your
19 microphone is on. Could you check that?

20 A. Yes, it is.

21 Q. Thank you. Perhaps if you could just
22 speak up a bit, the reporters are having a little
23 difficulty. Thank you.

24 A. Starting with the first overhead:

25 "It is the position of Industry that

1 tending and protection are essential and
2 necessary parts of a sound timber
3 management program."

4 Position statement two:

5 "The choice among tending alternatives to
6 be used in a management unit is an
7 'evolutionary' process that takes into
8 consideration:

9 (a) the silvical characteristics of the
10 species present in the unit;

11 (b) the terrain, site and stand
12 conditions of the unit;

13 (c) proximity to non-timber resource
14 values;

15 (d) the wood supply factors present in
16 the unit; and.

17 (e) available resources."

18 Position statement three:

19 "Given changing mill and end product
20 demands and diversity of forest types and
21 site conditions prevalent in the area of
22 the undertaking:

23 (a) flexibility in tending and
24 protection decision-making on each
25 management unit is essential; and

1 (b) it is critical that a broad range of
2 cost effective management alternatives
3 for tending and protection activities be
4 available to timber managers."

5 Dr. McCormack will be presenting evidence
6 in support of these first three position statements.

7 Position statement four:

8 "The use of authorized herbicides in
9 tending activities is an essential and
10 effective part of a sound timber
11 management program and, accordingly,
12 their continued use in appropriate
13 circumstances and under regulatory
14 controls is required to tend the timber
15 resource and should be supported."

16 Dr. McCormack and other members of the
17 panel will be presenting evidence in support of
18 position statement four and also the case studies.

19 Position statement No. 5:

20 Research, development and registration of
21 additional herbicides for use in timber
22 management in the area of the
23 undertaking, as well as alternate
24 vegetation management techniques must be
25 supported and encouraged."

1 Dr. McCormack and Mr. Tomchick will be
2 presenting evidence in support of position statement
3 five.

4 Position statement No. 6:

5 "The use of authorized insecticides,
6 including chemical and biological
7 insecticides, and protection activities
8 is an essential and effective part of a
9 sound timber management program and,
10 accordingly, their continued use in
11 appropriate circumstances and under
12 regulatory controls is required to
13 protect the timber resource and should be
14 supported."

15 Position statement No. 7:

16 "Research, development and registration
17 of additional insect control agents, both
18 biological and chemical, for use in
19 timber management in the area of the
20 undertaking must be supported and
21 encouraged."

22 And position statement No. 8:

23 "Properly managed, the use of pesticides
24 in timber management for tending and
25 protection is environmentally sound and

1 beneficial."

2 Dean Carrow will be presenting evidence
3 in support of position statements 6 through 8.

4 In addition to those eight position
5 statements, Madam Chair, the Industry will be
6 presenting additional evidence with regard to Sections
7 9 and 10 on page 5 of the executive summary. Section 9
8 deals with the benefits of the use of pesticides in
9 forestry. Evidence on Section 9 will be presented by
10 Dean Carrow and Dr. McCormack.

11 Section 10 deals with the terms and
12 conditions proposed by MNR regarding pesticides.
13 Evidence on Section 10 will be presented by Dean Carrow
14 and Mr. Tomchick.

15 Q. Thank you, Mr. Stanclik.

16 MS. CRONK: To assist the Board then in
17 light of the restructuring for scheduling reasons of
18 the evidence of this panel, I'm going to invite Dean
19 Carrow to present his evidence this afternoon with
20 respect to the fifth and sixth position statements that
21 Mr. Stanclik just outlined. They pertain to Section 5
22 and 6 relating to protection, a need for protection and
23 the use of insecticides.

24 Q. Dean Carrow, if I could turn then to
25 you and could I ask you perhaps to begin your evidence,

1 if you would, before the Board on these sections of the
2 statement of evidence and these positions of the
3 Industry by outlining in your view and that of the
4 Industry what the position is regarding the need for
5 protection of the timber resource?

6 DEAN CARROW: A. Thank you. Madam
7 Chair, Mr. Martel, as Mr. Stanclik has pointed out, the
8 position of the Industry is that with respect to
9 tending and protection, both of these activities are
10 essential and necessary parts of a sound timber
11 management program.

12 If I can elaborate on that a little bit
13 with respect to protection activities, one of the very
14 important elements of a timber management program of
15 course is timber supply planning and the view of the
16 Industry is that timber supply planning is impossible
17 to successfully implement without adequate protection.

18 I would like to explain the basis for
19 that position using a series of three overheads
20 followed by a series of 14 slides just to illustrate
21 how protection fits into the whole process of timber
22 supply planning.

23 MS. CRONK: To assist the Board, as I
24 understand it, the overheads to which Dean Carrow will
25 be referring, where they are different from or build on

1 materials contained in the statement of evidence, have
2 been distributed with the letter of April 25th, 1990
3 marked as Exhibit 1132.

4 DEAN CARROW: This first overhead, Madam
5 Chair, is a general representation of the sources of
6 wood supply over a long period of time that generally
7 characterizes eastern Canada.

8 I would like to point out at the outset
9 that it does not represent precisely the situation in
10 Ontario nor the position in the area of the
11 undertaking, but it is a situation that is found
12 generally from Ontario through eastward to the Atlantic
13 sea border and comes about largely as a result of the
14 fact that the Industry has historically relied almost
15 entirely on the old natural forest for its source of
16 industrial wood supply.

17 This particular graph then simply
18 represents harvest volume on the vertical axis with a
19 numerical indicator extended over time from 1990 well
20 into the next century and some time after the mid part
21 of the next century.

22 What I would like to draw your attention
23 to is the volume available for harvest over time, the
24 green line if you wish, comes from three different
25 sources of wood. In the early part of the

1 representation here from 1990 to up to the early part
2 of the next century, the present situation will
3 prevail; in other words, almost all of the volume
4 available for harvest for industrial wood supply will
5 come from the old forest and that's represented by the
6 blue line.

7 As we progress through time, of course,
8 from 1990 on up to approximately 2025 or 2030 that
9 particular old forest volume will be depleted through a
10 combination of activities, through harvesting, through
11 insect and disease losses and through fire and, in
12 fact, as we move on into the early part of the next
13 century that blue lines drops rather sharply and the
14 prediction -- the best estimate based on inventory
15 information from across Canada is that by approximately
16 2030 the old forest volume will have been almost
17 totally exhausted and will no longer be a source of
18 wood supply for the Industry.

19 We expect that early in the next
20 century - and here I have depicted 2010 as the start
21 point, but it certainly could vary by few years - that
22 the natural forest that is now growing and putting on
23 volume annually will have reached the stage where it is
24 mature enough to provide a portion of the wood supply
25 for the industrial requirements early in the next

1 century and as we move even further, approximately to
2 2000 or 25 or 30, we expect that some of the
3 plantations that have been started in the last 10 to 20
4 years again will be mature enough and will have
5 sufficient volume to provide an industrial wood supply.

6 So if I can explain how those three
7 sources then would contribute. If we go back to the
8 present situation, 1990, again just to reiterate,
9 virtually all of the volume available for harvest is
10 derived from the old forest volume with nothing coming
11 from the natural forest or from the plantation forest
12 simply because they are not mature enough yet.

13 As we move over to approximately 2020,
14 for example, we can see, if we carry the line up here,
15 in that particular year we would have a component of
16 the volume available for harvest coming from the red
17 curve, the natural forest volume, and that would be
18 added on to the volume that's derived from the old
19 forest volume giving us a green -- given us the total
20 up in here.

21 When we move over to 2030 or
22 approximately that point in time the situation changes
23 quite dramatically. At this point in time there is
24 virtually no wood left from the old forest for an
25 industrial wood supply and the Industry will be relying

1 very heavily on the natural forest volume that's been
2 regenerating for supply, as well as some of the early
3 plantations which will become operable. So that if you
4 add those three sources up there you will get a total
5 somewhere in this range. (indicating)

6 However, if we move on to something
7 around 2050 or even earlier, we expect there will be no
8 wood left, no wood available from the old forest volume
9 and the Industry will be totally reliant on plantation
10 forest, as well as managed natural forest to provide
11 their total supply.

12 MR. MARTEL: That dip in 2025, does that
13 represent a decline of not meeting the requirement?
14 You see the green line...

15 DEAN CARROW: What this does here, Mr.
16 Martel, is it points out in general terms a process I
17 guess and I would ask you again not to be too tied into
18 these numbers because they are really put up there just
19 to help you understand what happens over time, but you
20 are absolutely right.

21 With that kind of situation developing
22 there is a period of time in here where the total
23 volume available for harvest could decline quite
24 sharply or, in fact, as we hope in future it will
25 become larger with intensive management.

1 MS. CRONK: Q. Just to follow up on
2 that, if I could, Dean Carrow. In the bottom of this
3 graph you have indicated various specified time
4 intervals. Do you mean the us and the Board to
5 conclude from that that there is any magic to these
6 time intervals?

7 Are you suggesting that certain volumes
8 will be available at certain points in time?

9 DEAN CARROW: A. No, I'm not, not at
10 all. As I said earlier, they represent collective
11 professional judgment across eastern Canada based on
12 the softwood inventory information that is available in
13 all of the provinces.

14 If we accumulate that information and
15 represent it graphically, we have this type of
16 situation developing over time and, again, 2030, it may
17 be 2020, it may be 2040; it is impossible to predict
18 that.

19 Q. With respect to the volume
20 information, the harvest volume information on the left
21 side of the graph?

22 A. That's simply a numerical scale.
23 There are no volumes attached to that in terms of cubic
24 metres, it is just a numerical indicator to give you
25 relative trends in these various sources.

1 Q. Are they intended as projections of
2 actual harvest volume?

3 A. No, they're not. Now, if I could
4 just carry on with another overhead to show you the
5 effect of pest control, if you want.

6 This overlay is intended to show what the
7 effect is of inadequate protection of the old forest
8 volume; in other words, what happens if we do not carry
9 out an adequate level of protection of that old forest
10 as we move through time.

11 I said earlier that the old forest volume
12 was being depleted primarily through insect and disease
13 losses and through harvesting. By not protecting that
14 old forest volume, what happens simply is that that
15 blue line, which is illustrated here, is moved forward
16 in time so that in fact the old forest volume is
17 deleted somewhat more rapidly.

18 I have taken a rather drastic situation
19 here just to illustrate the effect on overall volume
20 available for harvest, but by not protecting them the
21 effect is that the blue line will move forward in time.
22 So that rather than being depleted in about 2030, in
23 fact the old forest volume may be depleted quite a lot
24 sooner. In this particular case, something around
25 2015.

1 What is interesting here is to see what
2 effect that has on the volume available for harvest
3 because, as you will recall, that volume available for
4 harvest is derived from the old forest volume and at
5 this particular point in time the natural forest volume
6 is not yet available for harvest.

7 So the overall effect is that that green
8 curve then experiences quite a significant slump and
9 the result is that by not -- the consequence of not
10 protecting the old forest volume then is simply to
11 exhaust that volume faster and create a situation in
12 which there is a period of time in here between
13 approximately 2010 and -- well, until the natural
14 forest volume becomes available, when there is a
15 considerable drop in the volume available for harvest.

16 That particular situation I'm going to
17 show you an example of in a few moments in the slides.
18 It is a situation which has actually happened on the
19 ground in the Cape Breton Highlands.

20 Now, the other effect that could be felt
21 here through inadequate protection is in a situation in
22 which the -- and I have taken one example here of the
23 plantation forest volume which is represented in black.
24 If those plantations are not adequately tended or
25 protected; in other words, if they're not protected

1 from insect damage or disease damage for that matter or
2 if they're not tended for control of competing
3 vegetation, then in fact those plantations do not grow
4 as quickly as predicted and rather than becoming
5 available in 2025, their availability may be delayed by
6 some number of years and here I have represented a
7 10-year delay just to illustrate the point.

8 So that, again, the effect of that is if
9 you look on the volume available for harvest here,
10 rather than having an amount that's equivalent to the
11 green line here we get a slump in that supply occurring
12 in this period simply because those plantations which
13 were predicted to become available around 2030 for
14 harvest simply did not have enough volume to justify
15 harvesting. They will become available but it will be
16 delayed in the future by a number of years.

17 Now, the net result of both of those
18 activities or both of those effects, if you want, is
19 that -- and getting back to your point, Mr. Martel, is
20 that we do have a situation in here -- I think I've
21 lost it.

22 Q. There is another pointer on the
23 witness table.

24 A. We have a situation in this time
25 period in here in which the security of wood supply is

1 somewhat uncertain. And in order for us to bridge the
2 situation from the old forest volume to the natural
3 forest and plantation forest volume, it would require
4 some very careful protection and tending activities in
5 order to secure the wood supply over that time period.

6 Q. Which time period are you referring
7 to, Dean Carrow?

8 A. In this particular case, the time
9 period -- the vulnerable time period, if you want,
10 would be from approximately 2015 through to
11 approximately 2035 or 2040. There is a period of
12 perhaps 20 years in there when in fact the wood supply
13 could be very adversely effected by inadequate tending
14 or inadequate protection carried out on any of those
15 sources of wood supply, the natural forest volume, the
16 plantations or the old forest.

17 Q. Just looking at these figures or
18 graphs, Dean Carrow, am I correct that the sum of the
19 red, blue and black lines is the green?

20 A. Yes, that's correct. That's right.

21 Q. And you indicated that you were going
22 to show the Board an example of the principles you have
23 just been discussing relating to the Cape Breton
24 Highlands?

25 A. Yes, I am going to show a series of

1 slide, 14 slides, just to illustrate what the effect of
2 inadequate protection is and I will be showing you
3 particularly what the effect is on the old forest
4 volume here.

5 MS. CRONK: The slides that you are about
6 to see, Madam Chair, I am informed are the photographs
7 that have been provided to you by Dean Carrow at Tab A.

8 DEAN CARROW: This series of slides,
9 Madam Chair, tend to illustrate the effect of spruce
10 budworm defoliation and damage and subsequent tree
11 mortality predominantly in eastern Canada. Most of it
12 is concentrated in the Cape Breton Highlands of Nova
13 Scotia. I'm sure you have seen a slide of the spruce
14 budworm before.

15 This particular stage of the insect,
16 which is a mature larva, is the one that causes
17 something around 90 per cent of the damage to the
18 trees. It is a very voracious feeder and when it
19 has -- in the process of feeding of course it consumes
20 the current year's needles on balsam fir trees and
21 spruce trees and the effect of this through time is
22 that those needles are either totally consumed and
23 disappear or they're damaged to the extent that they
24 turn quite a brilliant red/brown colour. If one looks
25 at it from the air --

1 Q. I'm sorry, Dean Carrow, just going
2 back to photo 2, if you would, for a moment. Will
3 those needles refurbish over time?

4 A. No. Certainly the ones that -- some
5 of them down in the lower part of the slide here are
6 green and they obviously are all right, but the ones up
7 on the top here, of course, that have either
8 disappeared or had turned red/brown are dead and they
9 will not be replaced, not in the current year.

10 Now, if you look at that situation from
11 the air, that red/brown discoloration shows up spread
12 throughout this particular stand here and that's
13 characterized as being a moderately defoliated stand of
14 balsam fir and spruce caused by spruce budworm.
15 (indicating)

16 Q. You are referring to photo 3?

17 A. That's correct. Sometimes I think
18 the spruce budworm, particularly in Ontario, is
19 thoughts of as being an isolated situation which of
20 course it is not.

21 This slide illustrates the spruce budworm
22 infestation levels in eastern Canada in 1979,
23 approximately 10 years ago, and in that particular year
24 we had pockets or outbreaks of very severe infestations
25 all the way from -- essentially all the way from the

1 Manitoba border, through northeastern Ontario, covering
2 all of northeastern Ontario, through northern Quebec,
3 through the Gaspé, through New Brunswick, parts of Nova
4 Scotia - there are the Cape Breton Highlands right in
5 there that are severely damaged - and over in eastern
6 Newfoundland as well.

7 I might point out that that particular
8 situation is not unusual, that in any given year you
9 will find areas of very severe spruce budworm outbreaks
10 almost anywhere in Canada. Somewhere in Canada there
11 will be on outbreak at very severe levels.

12 We know that in the past, of course,
13 these outbreaks have been dealt with both in Ontario
14 and other provinces by carrying out foliage protection
15 programs to protect balsam fir and spruce foliage from
16 severe damage and it has been carried out largely
17 through aerial spray programs. This particular program
18 was one carried out in the late 1960s in northwestern
19 Ontario by the Ministry of Natural Resources.

20 Q. Sorry, you were referring latterly to
21 photograph 5?

22 A. Yes, that's correct. Slide No. 6,
23 which is what is before you right now, shows the
24 situation in which the budworm has been allowed to
25 proceed and feed and damage the trees in an area where

1 it has not been protected.

2 I would like to point out, Madam Chair
3 and Mr. Martel, that -- I would like to point out some
4 distinguishing features here. It may not be that
5 obvious from where you are sitting, but there are
6 trees -- there is a stand of trees in here which is
7 essentially green, there is a small pocket down in here
8 which is green.

9 Q. You are referring to the centre lower
10 part of the photograph?

11 A. That's right, the centre lower part.
12 And in the background there are some green patches up
13 in there, but the main feature of this slide is that
14 this area in the centre part of the photograph
15 essentially is all dead, that's a silvery/gray colour
16 and that represents dead -- probably dead balsam fir in
17 this particular case.

18 This is a photograph that was taken in
19 southern New Brunswick in 1980 and I included it just
20 to illustrate a situation that arose in that particular
21 province in which for a while there was a ban on
22 protection spraying around habitation and you can see a
23 farm in here, and protection spraying programs were
24 discontinued within a certain distance of any
25 habitation and the effect of that, of course, was felt

1 very quickly.

2 In this particular case, these were
3 privately owned wood lots and after approximately four
4 or five years of feeding on balsam fire by spruce
5 budworm those trees died.

6 Q. You indicated that the particular
7 dead trees in this photograph were likely balsam fir,
8 what result, in a comparative sense, would you expect
9 had the trees been spruce?

10 A. Well, I think probably, without being
11 able to verify this, but my judgment would be that in
12 fact these small pockets of green trees, particularly
13 this one over here, probably is spruce. (indicating)

14 Spruce, although it is attacked heavily
15 by spruce budworm, is able to resist the attack and is
16 less vulnerable to dying than is balsam fir. So it can
17 generally sustain an attack of spruce budworm for
18 something like eight to ten years before it succumbs.
19 Balsam fir, on the other hand, succumbs much more
20 quickly to budworm attack.

21 Just in contrast - and again in New
22 Brunswick - this is a photograph of a forest area in
23 southern New Brunswick that has had annual protection
24 spraying programs and certainly one can see that this
25 area is in relatively good health. And that is slide

1 No. 7.

2 Now, I would like to move particularly to
3 the Cape Breton Highlands situation and just as a bit
4 of background, in the mid 1970s the Cape Breton
5 Highlands were attacked by a very high level of a very
6 severe spruce budworm outbreak.

7 At the time a protection spraying program
8 was proposed by the province, but there was localized
9 opposition to aerial spraying and as an option the
10 provincial government took the position that they would
11 not carry out protection spraying programs against
12 spruce budworm on the Cape Breton Highlands, rather
13 they would let the budworm run its natural course, go
14 through its natural cycle and they would live with the
15 consequences.

16 They were fairly certain that the
17 consequences would involve a large area of dead trees
18 but the approach being proposed was that they would
19 salvage logging operations, they would harvest and
20 extract as much of the wood as they possibly could and
21 re-utilize it, and go on from there with subsequent
22 regeneration programs.

23 And so these series of slides that I am
24 about to show you were taken in 1980 actually, so that
25 it was about four or five years after the budworm

1 outbreak started on the Cape Breton Highlands and it
2 was at a period in which most of the forest had been
3 killed and salvage logging operations had started.

4 Again, the contrast in colour here is
5 probably not all that evident from your viewpoint.
6 There are a few green trees down in the bottom centre
7 of this photograph but, with the exception of those, I
8 would say that virtually all of those trees in that
9 photograph are dead.

10 And certainly in this next slide which is
11 No. 9 it would be very difficult to find a living tree
12 on that slide, and this represents the start of salvage
13 logging operations with the road being built into the
14 middle of the dead forest area.

15 MR. MARTEL: Are you talking about the
16 entire picture now?

17 DEAN CARROW: Yes I am, Mr. Martel, it's
18 virtually all dead. This forest was well over 90 per
19 cent balsam fir, so it was a highly susceptible forest,
20 it was a highly susceptible forest to spruce budworm.
21 And as I said, there was no protection spraying carried
22 out at all, so it essentially killed the whole forest.

23 That road was put in to facilitate
24 logging operations and that slide, as well as the next
25 two or three slides, just show the progression of

1 salvage harvesting through time.

2 And what was done there was that the wood
3 was hauled to roadside, it was cut into 8-foot lengths
4 and it was stacked roadside in piles that were eight
5 foot high -- eight feet high and essentially it was
6 being stored in the forest until it could be hauled to
7 the mills and used and, in some cases, it was piled on
8 both sides of the road.

9 Again, this forest area here, that is
10 dead and probably will be harvested, or would have been
11 harvested soon.

12 MS. CRONK: Q. You are referring to
13 photograph No. 12?

14 DEAN CARROW: A. Yes, that's correct.
15 I'm sorry, I think that was No. 11. Is that right?

16 Q. According to the list that I have,
17 Dean Carrow, the photo that you now have up appears to
18 be photograph 11 and the last was photo 12, but perhaps
19 you can check the list.

20 A. They essentially are showing the same
21 thing. This is simply a closer view again of the
22 roadside stacks of wood that are 8-foot wood piled
23 eight feet high.

24 And that harvesting operation continued
25 on over a number of years of course and eventually

1 ended up in a clearcut area that was approximately
2 160,000 hectares in size. Many people view that as
3 probably the largest man-made clearcut ever created,
4 but it was brought about by spruce budworm killing that
5 forest area.

6 Q. What was the extent of wood actually
7 lost as a consequence of what you described?

8 A. As I mentioned the plan was to
9 utilize that wood as quickly as possible, to haul it to
10 the mill at Port Hawkesbury, the Nova Scotia Forest
11 industry's mill and certainly they used the wood as
12 quickly as they could, but there was far -- obviously
13 there was far more wood in the forest than they could
14 utilize on an annual basis.

15 And the consequence of that was that - if
16 I could just back up - much of the wood that was stored
17 in these piles of course was infected with fungal
18 infections and decay and the quality was lost. The end
19 result was that they lost about 35-million cubic metres
20 of wood in that particular operation.

21 Just to put that into perspective,
22 35-million cubic metres of wood is a volume that is
23 equivalent to 10 years of wood supply for the whole
24 Province of Nova Scotia, and to put that into
25 comparison to Ontario, we have heard the statistic

1 before I think that the estimate is that Ontario loses
2 about 15-million cubic metres of wood due to insect
3 attack each year. So it was more than double what
4 Ontario loses annually.

5 And this is the last slide, No. 14,
6 again, just giving you some idea of the extent of the
7 operations and the creation of this large clearcut
8 area.

9 Q. Thank you, Dean Carrow. Can you
10 assist the Board -- I am sorry.

11 Can you assist the Board, Dean Carrow, in
12 light of the principles which you have outlined, what
13 the Industry's position is regarding the use of
14 insecticides for protection programs in the area of the
15 undertaking?

16 A. With respect to the area of the
17 undertaking, the position of the Industry is that the
18 use of authorized insecticides, including both chemical
19 and biological insecticides, is an essential and
20 effective part of a sound timber management program
21 and, accordingly, their continued use in appropriate
22 circumstances and under regulatory controls is required
23 to protect the timber resource and should be supported.

24 Q. Do you share that position?

25 A. Yes, I do.

1 Q. What is the basis for it? What is
2 the nature of the concern that leads to that
3 conclusion?

4 A. One of the primary basis for it I
5 guess is the National Forest Sector Strategy and I
6 would like to just put another overhead up to
7 illustrate that.

8 Madam Chair, Mr. Martel, this is
9 recommendation No. 9 taken from the National Forest
10 Sector Strategy which has been entered previously as
11 Exhibit 589, and if we look specifically at
12 recommendation No. 9 it's very specific, it says:

13 "It is recommended that all elements of
14 the forest sector recognize that
15 pesticides are among the legitimate means
16 for effective forest management in
17 specific areas, that their use continue
18 to be regulated, and:

19 - ensure that all pest management
20 operations are ecologically and
21 economically justified;
22 - encourage development and use of
23 effective alternative methods of pest
24 control, including integrated pest
25 management;

- 1 - accelerate research into environmental
2 effects of pesticides; and.
3 - ensure that the process for
4 registration of pesticides for forest use
5 is not cost-prohibitive and is open to
6 public scrutiny."

7 The position of the Industry is that the
8 current situation in the area of the undertaking does
9 not support a National Forest Sector Strategy,
10 particularly recommendation No. 9, and I would like to
11 point out three reasons for that.

12 MR. MARTEL: Did you say Industry doesn't
13 support?

14 MS. CRONK: I'm sorry?

15 MR. MARTEL: I just didn't catch the
16 first part.

17 MS. CRONK: I understood Dean Carrow to
18 say that the current situation in Ontario in the
19 Industry's view does not support the National Forest
20 Sector Strategy, recommendation No. 9.

21 MR. MARTEL: Okay.

22 MS. CRONK: But perhaps we could ask the
23 witness to clarify that.

24 DEAN CARROW: That's right, Mr. Martel, I
25 was referring specifically to the situation in Ontario.

1 MR. MARTEL: Fine.

2 DEAN CARROW: The reason for that is
3 threefold. First of all, there is inadequate
4 government support for the Ministry of Natural
5 Resources policy on aerial application of insecticides
6 for forest management.

7 Secondly, the insect control technology
8 available to the forest managers in Ontario is
9 inadequate given the nature and complexity of the
10 forest pests that require management.

11 And, thirdly, the consequence of one and
12 two has led to a situation in which it has been
13 difficult to achieve consistent levels of control and
14 protection in the forest environment against forest
15 pests.

16 MS. CRONK: Q. Dean Carrow, I am going
17 to ask you to amplify on each of the suggestions that
18 you have just outlined and as they relate particularly
19 to the Industry's position on the need for the use of
20 insecticides.

21 But before I do so, the Board has heard
22 evidence from witnesses on behalf of the Ministry of
23 Natural Resources in this case that it's the position
24 of Ministry that the aerial application of insecticides
25 is the only practical technique available to achieve

1 control of insect outbreaks.

2 Before you explain what you have just put
3 up for the Board, can you tell me: Do you agree or
4 disagree with that proposition?

5 DEAN CARROW: A. Yes, I agree with it.
6 In a great majority of situations of course those
7 forest insect outbreaks are very extensive and they
8 occur in remote areas with very poor ground access, and
9 those two factors combined present a situation in which
10 it's very difficult to achieve any practical levels of
11 control with anything other than aircraft.

12 Q. Could you deal then with the first
13 issue and, that is, the position that there is
14 inadequate support, as you have described it today, for
15 the Ministry's policy regarding insect control?

16 A. Yes, I will.

17 Q. What do you mean by it?

18 A. The Ministry's policy on aerial
19 application of insecticides for forest management in
20 Ontario has been entered as Exhibit 604A, and that
21 policy --

22 Q. I'm sorry to interrupt, Dean Carrow.

23 MS. CRONK: It's actually a part of that
24 exhibit, for your records, Madam Chair.

25 Q. Sorry to interrupt.

1 DEAN CARROW: A. And that policy
2 outlines three purposes of aerial spraying which the
3 Industry endorses. First of all, to control insect
4 outbreaks; in other words, when insect outbreaks are at
5 a fairly small level and they are fairly well-defined,
6 they cover small areas. Aerial spraying should be
7 carried out either to suppress those insect outbreaks
8 to endemic levels or to eliminate them whenever
9 possible.

10 The second purpose of aerial spraying
11 would be to contain insect outbreaks that have already
12 become established; in other words, we have moved past
13 the situation in No. 1 to a situation in which an
14 outbreak has taken hold on an area, is established,
15 probably cannot be eliminated, but aerial spraying can
16 be carried out to prevent that insect outbreak from
17 expanding over a much broader area.

18 The third purpose of aerial spraying is
19 to protect the foliage of trees from insect damage in
20 very specified areas; in other words, to delineate or
21 identify specific forest stands or trees that require
22 protection from insect damage and to treat only those
23 areas.

24 That particular policy goes on to
25 recommend a strategy of early intervention and by that

1 what we mean is that the preferred course of action
2 would be to carry out No. 1 first, No. 2 second, and
3 No. 3 as a last resort when No. 1 and No. 2 have not
4 been successful. So the preferred course of action
5 with early intervention is to control the insect
6 outbreak at the start.

7 Industry supports this policy because we
8 see it as having four advantages which I can outline
9 for you. If the strategy that is recommended in that
10 policy, that is early intervention, is in fact followed
11 there are four very clear advantages to that policy.

12 One is that it represents a very cost
13 effective approach to pest control because generally it
14 will mean that control programs are necessary on
15 smaller areas, they will be less costly, they will
16 probably be much more effective in the long run.

17 A second result of that of course is that
18 by carrying out small-scale programs to control
19 outbreaks, in the longer term less insecticide would be
20 released into the environment because the need for
21 larger programs is reduced.

22 The third advantage of course is that
23 there would be a decreased need for large recurring
24 spray programs which, in recent experience, has turned
25 out to be a major cost component of timber management

1 in Ontario.

2 And the fourth advantage is that it
3 allows the manager to target treatment very
4 specifically to areas -- to only those areas that need
5 treatment and only when they need treatment. It's a
6 very specific or selective type of treatment.

7 Q. Dean Carrow, if I could just ask you
8 a number of questions regarding the evidence you have
9 just given.

10 The last two overheads that you have
11 shown relate to policy No. FR 04 10 01 of the Ministry
12 of Natural Resources and, as I understand it, a copy of
13 that appears as Appendix C to the statement of evidence
14 for Panel 7. Are you familiar with the full contents
15 of that policy?

16 A. Yes, I am.

17 MS. CRONK: The evidence from the
18 Ministry of Natural Resources' witnesses before the
19 Board - and in particular, Madam Chair, Mr. Martel in
20 Panel 13 of the Ministry of Natural Resources'
21 evidence - related in part to this policy.

22 Q. Was there, insofar as you are aware,
23 Dean Carrow, a predecessor to this particular policy
24 that applied at one point in time in the province?

25 A. Yes. I believe the first policy was

1 drafted in approximately 1980.

2 Q. All right. And do you have a copy of
3 that policy with you?

4 A. Yes, I do.

5 Q. Could I ask you to look at it,
6 please.

7 MS. CRONK: To assist you, Madam Chair,
8 Mr. Martel, the earlier version of that policy is
9 found -- at least a copy of it is found at page 173 of
10 Volume I, Panel 13, of the Ministry of Natural
11 Resources evidence with respect to maintenance, tending
12 and protection.

13 Q. Dean Carrow, just looking at the 1980
14 policy and bearing in mind what you have just said
15 about the policy No. FR 04 10 01, did you have a role
16 in the preparation or formulation of either of these
17 policy documents?

18 DEAN CARROW: A. Yes, I participated in
19 the formulation of the one drafted in 1980.

20 Q. In what capacity?

21 A. At the time I was Supervisor of Pest
22 Control for the Ministry of Natural Resources in
23 Ontario and that policy was drafted as an initiative of
24 that particular group.

25 Q. And what was your role with respect

1 to the preparation of that policy?

2 A. Well, I was supervising the
3 preparation of it at the time.

4 MS. CRONK: All right. Madam Chair, I
5 don't know if the Board has a copy of that policy with
6 you, it was on the list or at least I hope it was on
7 the list of documents that we suggested might be useful
8 for you. That is at page 173.

9 MADAM CHAIR: And that is Exhibit...?

10 MS. CRONK: Exhibit 604A, Madam Chair,
11 Panel 13, Volume I of the MNR evidence.

12 MS. CRONK: Q. Dean Carrow, what did you
13 understand the purpose of the 1980 policy to be, in
14 general terms?

15 DEAN CARROW: A. In general terms we
16 were trying to achieve a policy document that laid down
17 guidelines for the way in which spruce budworm would be
18 controlled in the Province of Ontario, given the fact
19 we were entering a period when outbreak levels were
20 much higher than in recent history and they were much
21 more wide spread and the need was obvious to develop
22 some criteria for the use of aerial application of
23 insecticides against spruce budworm.

24 Q. Could I ask you to look at page 2 of
25 the 1980 policy document and, in particular, to the

1 first full paragraph on that page. And could you take
2 a moment, please, and read that paragraph.

3 A. The one that starts, "This policy
4 should not..." ?

5 Q. Yes.

6 A. "This policy should not be
7 interpreted as promoting the wide-scale
8 use of insecticides. Where alternatives
9 to chemical insecticides are commercially
10 available, reasonably cost effective, and
11 approved federally and provincially for
12 use, the Ministry will use such
13 alternatives in preference to chemical
14 insecticides."

15 Q. Just stopping there for a moment,
16 Dean Carrow. Did you have any involvement in
17 formulation of that part of the policy?

18 A. Yes, I did.

19 Q. What do you understand that portion
20 of the policy to mean?

21 A. If I could paraphrase it, I guess
22 what is intended there is that any alternative to
23 chemical insecticides would be used if in fact it were
24 commercially available, if it was reasonably cost
25 effective - and by that I mean reasonably affordable -

1 and reasonably efficacious in terms of providing
2 protection or control and, of course, if it was
3 approved federally and provincially.

4 Q. With respect then to the term
5 reasonably cost effective, what are you suggesting was
6 the meaning of that term as used in this policy?

7 A. It's a combination of operational
8 cost with carrying out that program of course as well
9 as the level of protection or the level of insect
10 control provided by that particular alternative or
11 technology.

12 Q. And dealing then with the 1985
13 policy, policy FR 04 10 01, that you have referred to
14 in your overheads, is the same expression of policy or
15 a different expression of policy found in it?

16 A. My understanding is, is that the
17 wording is identical.

18 Q. Could you take a moment and just
19 review the policy and see if you can confirm that one
20 way or the other for the Board, please?

21 A. Well, the wording is identical to the
22 1980 version and so I would conclude that the intent
23 was the same.

24 Q. Thank you, Dean Carrow. I
25 interrupted you. Could you come back, if you would,

1 please, to what you described as being, and I think
2 your words were, the inadequate support for current
3 government; that is, current Ministry of Natural
4 Resources policy with respect to insect control and
5 explain to the Board what you mean?

6 A. Madam Chair, Mr. Martel, I think that
7 particular position can best be illustrated by
8 reviewing a series of decisions by the Minister of
9 Natural Resources which are outlined on pages 167 to
10 169 of our evidence.

11 And essentially in summary what happened
12 in the time period starting in May, 1985, was that the
13 Minister of Natural Resources announced at that
14 particular time that a spray program would be carried
15 out in 1985 against spruce budworm and jack pine
16 budworm in the area of the undertaking, but that only a
17 biological insecticide; namely, *Bacillus thuringiensis*
18 *kurstaki* would be used.

19 In 1986 the spray program proposed by the
20 Ministry of Natural Resources staff included both
21 biological and chemical insecticides in that particular
22 year and the evidence from a series of public meetings
23 across the province throughout the area of the
24 undertaking was that that particular proposal receive
25 general public support. Nevertheless, the Minister

1 authorized only the use of biological insecticide in
2 1986.

3 From 1987 up to the present time that
4 Ministerial position has really remained unchanged.

5 Q. What has its result been, in your
6 experience?

7 A. Well, the result essentially, in view
8 of the fact that these announcements have taken the
9 form of Minister's announcements, essentially the
10 result has been that they effectively constitute a
11 no-chemical policy for insect control within the area
12 of the undertaking.

13 Q. Has that, in your opinion and based
14 on your involvement in the area of protection
15 activities, had any consequences for those involved in
16 timber management activities in the area of the
17 undertaking?

18 A. I think it can't help but have an
19 effect on those people who are on the ground practising
20 timber management, particularly when the announcements
21 are made annually and they come from the Minister's
22 Office.

23 Certainly there has been evidence in the
24 past that Ministry of Natural Resources staff have
25 recommended the use of chemicals in particular

1 situations for budworm control, particularly in 1986,
2 and that that particular recommendation was accepted by
3 district and regional staff, but the Minister rejected
4 that recommendation and, in fact, approved only the use
5 of a biological.

6 And the effect of that as an annual
7 statement, if you want, or as an annual position is
8 that in the eyes of the staff it sends a very important
9 signal to them that in fact only alternatives to
10 chemicals are acceptable or, put another way, that
11 chemicals are not acceptable.

12 Q. The suggestion has been made by some
13 parties at this hearing, Dean Carrow, that the policy
14 of the Minister is not a ban, if I can put it that way,
15 on chemical insecticide use, but rather it requires
16 that their use be justified.

17 Do you agree or disagree with that
18 proposition; by proposition, I mean that that is the
19 case. Do you disagree or agree that that is the case?

20 A. No, I would disagree with that.

21 Q. Why is that?

22 A. I would think in my own experience in
23 working in government, if staff are apprised of a
24 Minister's decision on an annual basis that essentially
25 says that no chemicals will be used, essentially that

1 is a Ministerial order and it constitutes -- it
2 constitutes policy as far as staff are concerned.

3 Q. In practical terms, Dean Carrow, has
4 the use of chemical insecticides been permitted in
5 Ontario since 1985 for protection purposes in timber
6 management programs?

7 A. Not to the best of my knowledge.

8 Q. What is your understanding of the
9 situation today?

10 A. My understanding is that the current
11 position banning the use of chemicals is still in
12 effect.

13 MR. MARTEL: What has been the effect of
14 outbreaks and whatnot in the past five years then since
15 that? Has it been as great as people had anticipated
16 or somewhat less?

17 DEAN CARROW: Are you suggesting, Mr.
18 Martel, that there perhaps is some linkage between the
19 use of biologicals and outbreaks that would occur?

20 MR. MARTEL: I'm just trying to find out
21 what the effects have been. If you don't have
22 chemicals, Industry wants to use chemicals but they
23 haven't been used, has the devastation been greater,
24 less, approximately the same as with or without it,
25 just using B.t?

1 DEAN CARROW: Well, I think the results
2 that have been reported by the Ministry of Natural
3 Resources with respect to spruce budworm protection
4 spraying in fact illustrate that there has been reduced
5 effectiveness in the last five years and that, of
6 course, is presented in our evidence and I can perhaps
7 deal with that later.

8 MS. CRONK: Is that acceptable, Mr.
9 Martel?

10 MR. MARTEL: Yes, that's fine.

11 MS. CRONK: Q. The second issue or
12 position of the Industry that you outlined in your
13 overheads, Dean Carrow, related to what you described
14 as being inadequate insect control technology. Could
15 you explain to the Board, please, what you mean by
16 that?

17 DEAN CARROW: A. Yes, I can. I would
18 like to just use a couple of overheads here.

19 I would like to just respond to that
20 question by showing the Board the situation or recent
21 situation in Ontario with respect to, first of all, an
22 overhead showing the major forest insect pest found in
23 the area of the undertaking, as well as a list of the
24 registered insecticides that are available for use in
25 Canada for forest management.

1 Q. Does this table appear in the Panel 7
2 statement of evidence, Dean Carrow?

3 A. Yes, this overhead is Table 12 on
4 page 173 of the evidence and I'm going to present it as
5 two overheads simply because we couldn't really fit all
6 that material on one slide.

7 Just before going through that, though, I
8 would like to point out that this information of course
9 is extracted from the annual report of the forest
10 insect and disease survey of Forestry Canada and it
11 represents the situation in 1987.

12 I don't have any reason to suspect it
13 would be that much different in 1989 or 1990. These
14 are fairly representative pests and they tend to
15 persist over time.

16 I won't go through this in detail, all I
17 want to point out really is that there are a number of
18 major forest insect pests in the area of the
19 undertaking. By major what we mean is that they cause
20 severe defoliation and/or mortality or severe growth
21 loss to tree species in the area of the undertaking and
22 they start, of course, with the more well-known pests
23 such as spruce budworm, jack pine budworm, forest tent
24 caterpillar, but also include sawflies, cutworms, quite
25 a large number of sawflies actually, spruce budmoth,

1 some cone maggots and seed midges which are becoming
2 increasingly important because of the emphasis on seed
3 improvement and seed production areas.

4 And I would like to follow that with a --

5 Q. Just before you leave that, Dean
6 Carrow, are all the pests identified on Table 12 or
7 only some pests that relate to the area of the
8 undertaking?

9 A. Well, this is --

10 Q. Are they all found in the area of the
11 undertaking?

12 A. These are all found in the area of
13 the undertaking, that's right, and they all are
14 considered to cause moderate to severe damage in the
15 area of the undertaking.

16 Now, in comparison with that, I would
17 like to show you the overhead of Table 13 from the
18 evidence, that's on page 175, and again I have it in
19 two parts here just because it was not possible to get
20 it all on one overhead.

21 What we have here is a listing of the
22 insecticides that are registered federally and
23 authorized for forests and woodlands management use in
24 Canada. The left-hand column is the common name; that
25 is, the name of the actual active ingredient in the

1 material, the second column from the left, the product
2 name, would be the name that the product is sold under.

3 You will note that there are two forms of
4 registration. One is for forest management which
5 includes treatment of areas over 500 hectares in size
6 and one is for woodlands management for treatment of
7 areas less than 500 hectares in size.

8 I should also point out that there are
9 two different types of registration with respect to
10 application technique. A pesticide or an insecticide
11 can be registered only for ground application or only
12 for aerial application or it can be registered for both
13 ground and aerial application.

14 And of course the right-hand column is a
15 very important one because it specifies particularly
16 which insect pest those particular insecticides are
17 registered for use against and, in fact, it is an
18 infraction to use those insecticides for insects that
19 are not listed in the right-hand column; in other
20 words, it is a very specific type of registration.

21 Q. How many biological insecticides, as
22 set out in Table 13, are registered and authorized for
23 forest and woodlands management use in Canada?

24 A. There are currently three authorized
25 for three active ingredients. The first one, of

1 course, is *Bacillus thuringiensis* var. *kurstaki*, comes
2 under three product names, Dipel, Thuricide and Futura
3 and it's registered for use against the spruce budworm,
4 the tent caterpillar, gypsy moth and a few others.

5 And if I could just turn -- or move
6 further down the table. There are two other
7 biologicals registered in Canada. One is No. 10, the
8 red-headed pine sawfly virus which is registered for
9 use only against the red-headed pine sawfly. That
10 particular insect is found in Ontario.

11 No. 11, the Douglas-fir tussock moth
12 virus is registered against Douglas-fir tussock moth
13 and that insect is found only in British Columbia, so
14 it is of no particular interest to Ontario.

15 Q. Can you relate for the Board the
16 contents of Table 12; that is, what you have described
17 to be the major insect pests in the area of the
18 undertaking, to the insecticides set out in Table 13
19 that have been registered and are currently registered
20 and authorized for use for forest and woodlands
21 management use in Canada?

22 Can you relate the two and describe to
23 the Board what insect response agents, if I can put it
24 that way, chemical or biological are available for
25 those pests in the area of the undertaking?

1 A. All right. There are 13 insecticides
2 registered as we see on this particular list and if we
3 go back to Table 12 you will see that there are 15
4 pests listed in that table. Of those 15 there are
5 actually controls, control agents or insecticides
6 registered in Canada for 13 of them.

7 There is no registered insecticide for
8 Bruce spanworm or large aspen tortrix, but of the other
9 13 there are insecticides registered.

10 However, the interesting thing with
11 respect to the current policy in the Province of
12 Ontario is that there are biological insecticide
13 registered for only three insects on that list of 15;
14 those being the jack pine budworm, the forest tent
15 caterpillar and the spruce budworm.

16 Q. What is the effect of that, in your
17 view?

18 A. The effect of that particular
19 no-chemical policy then, comparing Table 12 and 13, is
20 that there are no control agents available for 12 of
21 the pests listed in Table 12.

22 Q. Is that in your view, having regard
23 to your experience in protection activities and
24 protection matters, an appropriate or inappropriate
25 situation?

1 A. That's a totally inappropriate
2 situation.

3 Q. Why is that, Dean Carrow?

4 A. It leaves the resource manager with a
5 situation in which a number of insect pests can cause
6 very severe damage to valuable trees species, may cause
7 mortality to valuable tree species and it makes it
8 impossible to go back to one of the introductory
9 comments that it makes it impossible to carry timber
10 supply planning because the capability of protecting
11 that resource has been removed in view of the fact that
12 you have 12 insect species that could cause very severe
13 damage and perhaps mortality to that stand.

14 Q. Just finally on that issue, Dean
15 Carrow, was there, insofar as you are aware in 1985 at
16 the time of the ministerial announcements that you have
17 spoken about, was there at the time a scientific basis
18 with which you are familiar that was relied upon or
19 that supported the announcements that were made?

20 A. To the best of my knowledge there was
21 no scientific basis provided for the ban on the use of
22 chemicals in the -- the use of chemicals against forest
23 pests in Ontario.

24 Q. All right. Do you as part of your
25 activities in protection matters generally involve

1 yourself in the current state of scientific knowledge
2 on insect control agents on a continuing basis?

3 A. Yes, in a general sense I try to keep
4 current with what is developing in terms of technology.

5 Q. All right.

6 MS. CRONK: I am conscious, Madam Chair,
7 Mr. Martel, of the time. Is this convenient --

8 MADAM CHAIR: Why don't we take our
9 afternoon break now, Ms. Cronk.

10 MS. CRONK: Thank you.

11 MADAM CHAIR: Will you be taking the time
12 until 5 o'clock?

13 MS. CRONK: Yes, I suspect we will, Madam
14 Chair.

15 MADAM CHAIR: And then we won't be having
16 these witnesses back tomorrow?

17 MS. CRONK: No, as I understood the
18 arrangements that had been made.

19 MADAM CHAIR: Thank you.

20 ---Recess taken at 3:15 p.m.

21 ---On resuming at 3:40 p.m.

22 MADAM CHAIR: Please be seated.

23 Ms. Cronk?

24 MS. CRONK: Q. Dean Carrow, following on
25 your discussion of the effects of inadequate technology

1 or the need for adequate insect control technology, can
2 you provide an illustration to the Board of the types
3 of issues that you have been describing and the results
4 of not having available adequate technology at
5 appropriate intervals?

6 DEAN CARROW: A. Yes, I can, Ms. Cronk,
7 and again I would like to use an overhead to illustrate
8 the effect of not having adequate insect control
9 technology in the Province of Ontario.

10 And, Madam Chair, this is Table 11 in the
11 evidence which is found on page 170.

12 This particular information is relevant I
13 think because it illustrates what can happen with
14 effective control technology and in fact what may
15 happen if that technology is not made available.

16 This particular table represents the
17 gypsy moth situation in Ontario which until the early
18 1980s was not a severe problem. Gypsy moth is an
19 introduced pest in North America, having been
20 accidentally imported from Europe, and it found its way
21 into Canada many decades ago but it did not become a
22 serious problem in Ontario until the early 1980s.

23 Prior to that time, as gypsy moth was
24 found in isolated locations across Canada, Agriculture
25 Canada had the primary responsibility for bringing that

1 pest under control and the way in which they did that
2 was to practise this strategy of outbreak control; in
3 other words, if a gypsy moth outbreak was identified
4 they would carry out a control program that was
5 targetted to that particular location with the
6 objective of eliminating the insect in that area.

7 In 1981 in eastern Ontario gypsy moth
8 erupted and caused an area of moderate to severe damage
9 of about 1,500 hectares and there was no control
10 program carried out in that area because it was a
11 relatively new problem, but in recognition of that new
12 problem the Ministry of Natural Resources proposed to
13 carry out an outbreak control program; in other words,
14 one that was consistent with the Ministry's policy on
15 application of insecticides with the objective of
16 outbreak control and they proposed to do that in 1982
17 treating an area of about 4,000 hectares.

18 At that particular time the material that
19 was registered and approved for gypsy moth control in
20 Canada was a material called Sevin, a product called
21 Sevin, otherwise known as carbaryl, and it was the
22 insecticide that Agriculture Canada had used
23 historically to achieve outbreak control.

24 It has been proven to be effective for
25 suppressing outbreaks of gypsy moth to very low levels.

1 So the proposal then was to carry out a 4,000-hectare
2 program with carbaryl in the spring of 1982. When the
3 program was announced there was some localized
4 opposition in that program --

5 MADAM CHAIR: Excuse me, Dean Carrow.
6 Was that 416 hectares?

7 DEAN CARROW: That, Madam Chair, is the
8 amount that was actually sprayed. The area proposed
9 was quite a bit larger of 4,000 hectares.

10 As I mentioned, there was some localized
11 opposition developed to the program and in response to
12 that opposition the Minister decided to reduce the
13 program by approximately 90 per cent, bringing it down
14 to an area -- a treated area of about 416 hectares
15 total and of that 416 hectares only about 22 per cent
16 of it was treated with Sevin. The rest was treated
17 with biological materials, B.t.k and gypsy moth virus,
18 which I might point out at that particular time were
19 not proven to be effective control agents for outbreak
20 control.

21 It is interesting to look historically at
22 what the consequence of that is because it really has
23 turned out in hindsight to be somewhat of an experiment
24 and a lesson. Between 1982 and 1983, in this period of
25 one year, that outbreak expanded almost tenfold and

1 from 1982 to 1985 it expanded about fiftyfold and
2 essentially by not taking action in 1982 to carry out
3 that spray program on a 4,000-hectare outbreak the
4 opportunity to bring that outbreak under control had
5 really been lost.

6 The result over that time period, of
7 course, is that we ended up with a program that --
8 sorry, with a problem that covered approximately a
9 quarter of a million hectares in 1985, it was a much
10 more extensive problem, much more wide spread damage
11 and beginning in 1986 it led to very large scale spray
12 programs, programs that were very costly and led to the
13 introduction of considerably more insecticide into the
14 environment than what would have originally been
15 proposed in 1982.

16 From 1986 up to the present time the
17 Ministry has conducted spray programs against gypsy
18 moth on an annual basis as required using only B.t.k
19 and B.t. has been put on at either a double application
20 or triple application and I would just like to point
21 out this is not a usual application rate for B.t.

22 The normal application is a single
23 application, but in an attempt to get an effective and
24 acceptable level of control with B.t., the Ministry has
25 used double and triple applications in order to improve

1 the effectiveness of the spray program.

2 Despite this, if one looks at the reports
3 that are published by the Ministry of Natural Resources
4 in the annual forest pest control forum, it's obvious
5 that the opportunity for outbreak control has been
6 lost. In fact, the target of 90 per cent control of
7 gypsy moth, which was the original target, was possible
8 to achieve in only about half of the area in those
9 recent programs since 1986 up to -- from 1986 up to the
10 present time essentially.

11 MR. MARTEL: Dr. Carrow, how do you
12 account for the significant drop from '85 to '87 by
13 about 50 per cent -- or a hundred per cent, cut in
14 half, and then even continuing to apply it? It is now
15 continuing to increase significantly.

16 DEAN CARROW: Right. What we are seeing
17 there, Mr. Martel, is the natural dynamics of the gypsy
18 moth outbreak and that I would point out would prevail
19 or would be evident quite apart from the spraying
20 programs.

21 That particular insect is brought under
22 control naturally by a number of natural factors, fire
23 being one of them, parasites, weather is often a very
24 significant factor in bringing outbreaks under control
25 and what those statistics demonstrate under the

1 moderate to severe damage column I think is a natural
2 trend in the course of an outbreak.

3 MS. CRONK: Q. Just looking at the
4 results over those years, Dean Carrow, and if I could
5 ask you to look at perhaps the years 1982 through to
6 1985, would you not have expected an increase in the
7 area damaged by gypsy moth in those years in any event
8 even if chemical insecticides had been used in an
9 effort to achieve insect control?

10 DEAN CARROW: A. No, I wouldn't.
11 Certainly the proposal that was developed in 1982 was
12 done largely on the experience of Agriculture Canada
13 which had been carrying out annual spray programs
14 against gypsy moth across Canada with the objective of
15 controlling outbreaks, and in fact Agriculture Canada
16 maintains that they've had a very high level of success
17 in eliminating outbreaks.

18 So that if in fact you are able to
19 eliminate an outbreak, then in fact the figure you
20 should see under the moderate to severe damage column
21 should be zero. So if that program had been carried
22 out in 1982 I would have expected that the level of
23 damage the next year would have been extremely low.

24 Q. Does the area effected, as indicated
25 or referred to in Table 11, pertain to the area of the

1 undertaking?

2 A. No, it doesn't, not in total. As I
3 pointed out at the outset, this particular outbreak
4 started in eastern Ontario which was outside the area
5 of the undertaking. As it has expanded, it has
6 obviously covered a much larger area and has tended to
7 move to the north and to the west and, indeed, part of
8 it now is in the southern part of the area of the
9 undertaking, as I understand it.

10 Q. Just looking at the figures then for
11 the last several years, is it appropriate in your view
12 to conclude from this table that there is a serious
13 gypsy moth infestation in the area of the undertaking
14 today? Is that what we are to take from this table?

15 A. I wouldn't characterize it as serious
16 at this present time, but I think the concern is the
17 trend that has developed since 1982.

18 It has moved from eastern Ontario into
19 the southern part of the area of the undertaking and it
20 is continuing to move in that direction and certainly
21 there are susceptible tree species in the area of the
22 undertaking and the insect has proven that it can
23 survive in that region as well.

24 So our expectation would be that it would
25 continue to be a problem and it may in fact develop

1 into a much more serious problem.

2 Q. And, again, still looking at the last
3 several years, in your opinion would it be appropriate
4 or inappropriate to conclude that the decline in the
5 area of moderate to severe damage in part was the -- in
6 part or in whole was the result of the application of
7 B.t?

8 A. I would be much more inclined to
9 attribute the majority of that decline to natural
10 factors. Certainly given -- and that applies not only
11 to gypsy moth but certainly to other major insect pests
12 as well. In fact, the natural control factors are far
13 more powerful.

14 Q. Are you saying that B.t had no effect
15 when applied in those years?

16 A. The effect -- the benefit of B.t in
17 those years was simply to protect the foliage of trees
18 in the designated areas that had been sprayed, and
19 certainly I would doubt very much that it had a
20 significant effect in causing a reduction in the
21 populations of gypsy moth.

22 Q. I see. Well then, dealing with
23 insect control as distinct from protection of existing
24 foliage, was the Ministry of Natural Resources
25 successful after 1986, in your view, in achieving

1 insect control for gypsy moth with the use of B.t?

2 A. No. No, I wouldn't say they were
3 successful at all, not with B.t.

4 Q. All right. And could I refer you,
5 Dean Carrow, to Exhibit 1136 which is the bundle of
6 interrogatories that has been marked as an exhibit
7 before the Board and specifically to MNR interrogatory
8 No. 2.

9 MS. CRONK: I'm sorry, question No. 4,
10 page 2. I beg your pardon, Mr. Martel. It is Exhibit
11 1136, question No. 4.

12 Q. Were you the author of this response,
13 Dean Carrow, to this interrogatory?

14 DEAN CARROW: A. Yes, I was.

15 Q. Could you outline for the Board,
16 please, the nature of the inquiry made and the response
17 which you considered appropriate?

18 A. Yes. The interrogatory I guess
19 focused on the statement in the evidence that sampling
20 showed that the B.t treatments for gypsy moth were
21 successful for insect control; that is, they produced a
22 level of 90 per cent or greater population reduction on
23 only slightly more than half of the treated area and
24 the interrogatory asked what the basis of the figure of
25 90 per cent plus was and to provide any scientific

1 literature to support the figure.

2 Q. And your response was?

3 A. The figure of 90 per cent plus is the
4 figure that you will see quite commonly in
5 entomological texts and literature when the objective
6 is to bring particular insect outbreaks under control;
7 that is, to either eliminate the insect or to bring it
8 down to levels that are very low or endemic levels.
9 That is not a level of control required for foliage
10 protection particularly, but it is one that is used
11 commonly for either stabilizing populations of insects
12 or bringing them down to lower levels.

13 The reference that's included in the
14 answer to that interrogatory is one taken from the U.S.
15 Department of Agriculture publication called Basic
16 Principles in Insect Population Suppression and
17 Management and in that particular publication Table 10,
18 which is given on page 54 of the reprint, shows that
19 something in the order of 90 per cent suppression of
20 the population is required to bring an insect under
21 control that has the capacity for a fivefold increase
22 per generation.

23 And, in fact, if you read the text a
24 little bit further you will find a statement to the
25 effect that if the insect has a maximum increase rate

1 of tenfold the suppression level would have to be 90
2 per cent just to stabilize the population, just to keep
3 it at a static condition.

4 Just very generally, Madam Chair and Mr.
5 Martel, the gypsy moth is an insect that has -- can
6 bear -- the female can bear up to 500 eggs. And just
7 in a general sense, if that particular population
8 experiences 90 per cent mortality due to natural
9 factors alone, fires, weather, parasites and so on, the
10 remaining insects have the capacity for a twenty-five
11 fold increase.

12 So we are dealing with an insect that has
13 a very substantial potential for increase from one
14 generation to the next. So certainly the 90 per cent
15 figure that's derived from the USDA publication would
16 be rather conservative with respect to gypsy moth.

17 In support of that, Agriculture Canada in
18 their control programs from year to year uses the
19 objective of 100 per cent control; in other words,
20 their target is to eliminate the outbreak in a given
21 area with their spray programs.

22 Q. What then, Dean Carrow, do you
23 suggest that it would be appropriate to take from the
24 information presented in Table 11?

25 A. I think the main thing to recognize

1 there is that in fact there was an opportunity in 1982
2 to bring a very important outbreak of gypsy moth in
3 eastern Ontario under control, and certainly at the
4 time, with the technology that was available and the
5 knowledge that had been derived from Agriculture Canada
6 experience, there was a reasonably good probability of
7 bringing that insect outbreak under control with a
8 program -- with a spray program carried out with
9 carbaryl or Sevin.

10 That opportunity was lost partly because
11 that particular technology was not permitted and partly
12 because a small portion of the area, only a small area
13 of the portion was treated, and in fact that problem
14 has developed into a far more wide-spread and extensive
15 problem than was initially experienced and one that
16 will probably require annual control programs at some
17 level for the foreseeable future.

18 Q. Are there in your view, Dean Carrow,
19 limitations from a forestry entomology perspective with
20 respect to the use of biological insecticides?

21 A. Yes, there are some fundamental
22 limitations and I think I could best go over those just
23 by using another overhead here.

24 There are -- I think there are three
25 limitations that are fairly fundamental, Madam Chair,

1 Mr. Martel, that we should all recognize, they are
2 inherent in biological insecticides, there is not an
3 awful lot that can be done to overcome them regardless
4 of how effectively they are applied.

5 If we look first of all at bacterial
6 insecticides, and the most common one that we are
7 familiar with is B.t.k., bacillus thuringiensis
8 kurstaki, that particular variety of B.t. is effective
9 against only insects of the moth and butterfly family
10 otherwise known as lepidoptera and certainly that
11 particular order of insect, lepidoptera, includes many
12 of the important defoliating insects but it certainly
13 does not include several important forest insects as
14 well.

15 So it's a fairly selective insecticide,
16 again affecting only insects in the moth and butterfly
17 family. It's not effective against sawflies, it's not
18 effective against beetles and so on.

19 The virus insecticides are even more
20 selective and they are developed -- first of all, they
21 occur only on a specific insect, one particular
22 species, and they are isolated from that species, then
23 they are grown, propagated and of course are affected
24 against only the species from which they were
25 collected.

1 So in the case of red-headed pine sawfly
2 virus otherwise known as Lecontvirus, it was found
3 naturally on red-headed pine sawfly, it was isolated,
4 propagated and applied made against red-headed pine
5 sawfly and works very well against it. It's a highly
6 effective virus but it's not effective against any
7 other insect.

8 The third factor is one that is generally
9 true of all biologicals and perhaps it's one of the
10 most important operational limitations or restrictions,
11 constraints I should say and, that is, that both
12 bacteria and viruses, in effect any of those microbial
13 materials if you want, have to be consumed by the
14 insect to be effective; whereas, chemical insecticides
15 generally will work either by being consumed or through
16 dermal contact or skin contact of the insect, the
17 insect may walk over the treated part of the foliage
18 and be killed, or in fact some of the chemical
19 insecticide may land directly on the skin of the insect
20 and kill it.

21 But in the case of biologicals there is
22 only one method of action and that is through the
23 mouth, it has to be consumed, it has to be eaten. What
24 makes that a particularly difficult constraint in our
25 environment is that in the spring or early summer of

1 the year when we are carrying out control spraying
2 programs weather conditions are often very cool,
3 inclement, overcast weather, perhaps rain and the
4 effect of that is to very seriously diminish the
5 feeding activity of the insects. In fact, while the
6 insects are out there on the foliage if the weather
7 turns cold they may in fact become sedentary and not be
8 active at all.

9 And those biological insecticides,
10 particularly the microbials, have a limited lifespan so
11 they may only last for a few days in terms of toxicity.
12 And quite often in the past experience has shown us
13 that poor weather conditions at the time of spraying
14 have resulted in poor results and we have attributed
15 that primarily to the fact that the larvae simply
16 aren't feeding.

17 Q. You have indicated, Dean Carrow, with
18 respect to Table 12, you will recall the list that you
19 outlined to the Board of the major insect pests in the
20 area of the undertaking, that there were 12, as I
21 recall what you said, for which there are no biological
22 insect control agents available today.

23 Are these pests; that is, that group of
24 12, currently a problem in the area of the undertaking?

25 A. This question was asked by the

1 Ministry of the Environment in Interrogatory No. 4.

2 MR. CRONK: That forms part, Madam Chair,
3 of Exhibit 1136.

4 DEAN CARROW: And just to repeat the
5 question, Madam Chair, the question said in part:

6 "The evidence indicates that B.t. is both
7 ineffective and not registered for use
8 against several other important
9 forest insects, for example, bark
10 beetles, wasps and sawflies and seed
11 insects."

12 The question from the Ministry of the
13 Environment was:

14 "Were biological or chemical insecticides
15 applied in the area of the undertaking
16 prior to 1985 to control bark beetles,
17 wasps, sawflies and seed insects; and, if
18 so, please describe the products used
19 and the nature and extent of their
20 application."

21 MS. CRONK: Q. Perhaps you could deal
22 first, Dean Carrow, with the situation in the past and
23 then the situation today as you know it.

24 DEAN CARROW: A. I might point out,
25 Madam Chair, that sometimes the information on these

1 things is not entirely complete, we have to rely on
2 unpublished reports and certainly there are unpublished
3 reports of control programs being carried out on some
4 of these insects sometimes in the area of the
5 undertaking, sometimes in areas that are close to
6 Ontario. So I will go through that very quickly.

7 First of all, the red-headed pine sawfly
8 in Ontario was controlled between 1958 and 1968 over a
9 10-year period using chemical insecticides which in the
10 reports were not identified.

11 The jack pine sawfly, just to take
12 another sawfly, is one that exhibits periodic outbreaks
13 in the area of the undertaking and although I could
14 find no reports of spray programs being carried out in
15 Ontario, there were reports of two chemical spray
16 programs carried out in Quebec with very a high level
17 of success.

18 Another sawfly, the larch sawfly is one
19 that has gone through epidemic phases in the area of
20 the undertaking for over a hundred years now, the first
21 one -- the first recorded one being in the 1880s,
22 another epidemic in the 1920s, another in the 1950s,
23 and another in the 1960s. This is an insect that
24 causes very severe damage on larch and kills the trees
25 after severe attack.

1 I could find no reports of chemical
2 sprays being carried out against this insect, but there
3 were several attempts to use biological control
4 technology, namely parasites from 1910 to 1962. This
5 is an insect I might add where we believe that future
6 epidemics will be likely. And in the meantime larch
7 has assumed increasing commercial importance with the
8 Industry in Ontario and I think it's probable that
9 there will be need for control action against this
10 particular pest in the future.

11 For bark beetles, the one bark beetle
12 that has required control periodically over the period
13 is white pine weevil which causes severe damage on both
14 white pine and jack pine and there are records and
15 reports of biological control attempts in Quebec in
16 1950 using introduced parasites.

17 Q. Is it realistic in your view, Dean
18 Carrow, that some of these pests may require control
19 programs in the future in the area of the undertaking;
20 by some of these pests, I mean some of those in the
21 category of 12 for which there is currently no
22 biological response agent?

23 A. Yes, I think it's quite likely that
24 we will have continuing problems with pests similar to
25 the ones listed in the table I put up earlier. The

1 ones that I have just reviewed, the sawflies and white
2 pine weevil, for example, I think there is a high
3 probability of those insects causing an unacceptable
4 level of damage in the future.

5 If I could go back just briefly to the
6 overheads I showed at the outset illustrating the role
7 of pest control in wood supply planning, the general
8 belief is that there is going to be a gap in the future
9 and we are going to have to manage that wood supply and
10 that wood resource -- the timber resource very, very
11 carefully to make sure that that gap is -- the effect
12 of that gap is minimized.

13 I think the types of damage that we
14 witnessed in the past with respect to insects like
15 larch sawfly, particularly jack pine sawfly, will
16 become increasingly unacceptable as we move on towards
17 more intensive management of the timber supply and I
18 see that in particular for insects such as larch
19 sawfly, jack pine sawfly and white pine weevil that
20 there probably will be a need for control action.

21 Q. Well, perhaps I could turn to the
22 Industry panel members. And just dealing with the
23 three that Dean Carrow has just identified, can any of
24 you gentlemen assist as to whether currently in your
25 particular part of the area of the undertaking you are

1 experiencing a problem with, let's start with weevils?
2 Do any of you have that experience at the current time?

3 MR. STANCLIK: A. In the Iroquois Falls
4 Forest we are currently experiencing some serious
5 mortality in our younger spruce plantations on specific
6 sites due to attacks by a root collar weevil.

7 MR. TOMCHICK: A. In our Quebec and
8 Ontario Paper Company Timmins Forest we have seen
9 increasing problems with white pine weevil in
10 established jack pine plantations seven to ten years
11 old. The problem is not by any means epidemic, but we
12 are certainly seeing increased evidence of this insect
13 and it's probably due to the increased level of
14 regeneration.

15 We also are seeing incidence of cutworm
16 and these are generally in the young jack pine
17 plantations, although you do see them in spruce
18 plantations also and especially in areas where a
19 prescribed burn has been carried out. And again, they
20 are not by any means epidemic, however, the incidence
21 does seem to be increasing.

22 Q. Thank you, Mr. Tomchick. Sorry, Mr.
23 Bunce?

24 MR. BUNCE: A. Could I add that on the
25 Upper Spanish Forest of E.B. Eddy we also had a problem

1 and it's increasing with the white pine weevil on our
2 plantations of jack pine.

3 Q. And on your plantation, Mr. Bunce -
4 if I could just deal with your response first - is it
5 at the epidemic level?

6 A. No, I wouldn't say it was at the
7 epidemic level, it's just increasing. We seem to be
8 noticing more and more in most of our plantations.

9 Q. And, Mr. Stanclik, you didn't
10 indicate the degree of the problem with respect to, I
11 think you said the root collar weevil?

12 MR. STANCLIK: A. Yes, it's not epidemic
13 level but on specific sites it does cause very serious
14 mortality in the young plantations. So it is not an
15 overall problem, but on specific sites it is a very
16 serious problem.

17 Q. Thank you, Mr. Stanclik.

18 Dean Carrow, could you indicate if you
19 would please then for the assistance of the Board, what
20 your opinion is regarding the desirability of
21 continuing a directive or a policy which, in practical
22 terms, prohibits the use of chemical insecticides in
23 the area of the undertaking?

24 DEAN CARROW: A. My view is that it's an
25 entirely undesirable situation for a number of reasons.

1 First of all, to the best of my knowledge there is
2 absolutely no scientific basis for a generic ban on the
3 use of chemicals in the forest environment of Ontario.

4 In addition, this particular policy is
5 inconsistent with a position taken by all of the
6 federal regulatory agencies in Ottawa who have primary
7 responsibility for regulating pesticide use in this
8 country and it is inconsistent with the position of the
9 Ministry of the Environment that still authorizes these
10 materials for use in the forest environment.

11 I think one of the indirect effects,
12 Madam Chair, is that these types of provincial bans,
13 provincial actions that are not based on scientific
14 grounds have the indirect effect of seriously eroding
15 public confidence in the federal and provincial
16 pesticide regulatory system across Canada and I might
17 point out that these systems are considered to be
18 amongst the most rigorous in the world.

19 And I guess specifically with respect to
20 the Industry and the forest sector as a whole, it
21 denies forest managers some very essential technology
22 that is available to other producer groups both in
23 Ontario and across Canada.

24 Q. What did you mean, Dean Carrow, when
25 you said that it was inconsistent with the position, as

1 I wrote it down, of federal regulatory agencies?

2 A. The federal regulatory agencies of
3 course have primary responsibility for registering
4 pesticides -- all pesticides for use in Canada,
5 including forestry use, and the primary agency is
6 Agriculture Canada but Health and Welfare Canada and
7 Environment Canada, Fisheries and Oceans Canada all
8 play a very important role in making the decision about
9 whether those materials will be registered for use in
10 Canada and, if so, what kinds of restrictions will be
11 placed on their use.

12 They have authorized and registered a
13 number of insecticides, the ones that I listed
14 earlier - 13 I think was the number - for use in
15 forestry in Canada and essentially a provincial ban
16 overrides those regulatory decisions and does so purely
17 on political grounds simply because there is no
18 scientific basis for that position.

19 Q. The third position that you indicated
20 was taken by Industry and yourself in this case on
21 issues related to protection of the timber resource
22 concerned what your overhead listed as being
23 inconsistent levels of control and protection.

24 Could you explain, if you would please
25 for the Board, what you mean by that, and what is

1 involved in reaching that conclusion and suggesting to
2 the Board that that is the case?

3 A. I think a review of the foliage
4 protection results that have been reported by the
5 Ministry of Natural Resources since 1979 reveals a high
6 level of variability from year to year and the position
7 of the Industry is that standards are essential to
8 assess the success of operational spray programs and
9 hopefully over time to reduce that level of
10 variability.

11 If I could just use as an example
12 standards that are used in the Province of New
13 Brunswick which has had a history of 40 years of
14 spraying programs now for control of spruce budworm. I
15 would like to just put these up on the overhead.

16 As I said, Madam Chair, the Province of
17 New Brunswick, and indeed as we point out in the
18 evidence, the Province of Quebec as well uses numerical
19 standards to assess the relative success of their
20 spraying programs from year to year.

21 Just for the purposes of illustrating
22 this point I have put the standards used by the
23 Province of New Brunswick up on the overhead and in
24 carrying out their operational spraying programs yearly
25 what they try to achieve is 60 per cent preservation of

1 the current growth on balsam fir; in other words, to
2 preserve in tact 60 per cent of the current year's
3 needles, and on spruce, to preserve 50 per cent of the
4 current year's growth.

5 In the evidence presented by the Ministry
6 of Natural Resources earlier relevant to this point
7 they testified that the standard was 25 -- the
8 comparable standard was 25 per cent to 75 per cent
9 preservation of the current year's growth. And the
10 position of the Industry is that such a wide standard
11 of protection is an unacceptable standard.

12 Q. What is your own view, Dean Carrow?

13 A. My view is that we are living in a
14 time when we are spending more and more money in timber
15 management, forest management in general is coming
16 under more and more public scrutiny, there is a much
17 higher level of accountability required than ever
18 before, that in fact a numerical standard should be
19 used to measure the relative success of programs from
20 one year to the next.

21 As a matter of fact, the forestry sector
22 has already adopted the principle of numerical
23 standards in other operational practices such as
24 harvesting operations, utilization standards,
25 regeneration standards and so on.

1 Q. Is it your view, Dean Carrow, that
2 these particular standards reflect those that should be
3 adopted in this province?

4 A. No, I wouldn't say that at all. I am
5 simply putting that up to illustrate that in fact the
6 Province of New Brunswick has adopted one numerical
7 standard or two numerical standards if you wish, one
8 for each of the species, and they use that to measure
9 the relative success of their program from year to
10 year.

11 The numerical standard adopted by another
12 province may be quite different. It would have to be
13 appropriate for that particular situation.

14 Q. Is there then, in your view, any
15 magic to a particular percentage, a particular number
16 as reflecting an appropriate quantified standard for
17 the area of the undertaking for foliage protection?

18 A. No, I wouldn't say so. I think -- if
19 I could just elaborate on these figures here, Mr.
20 Martel and Madam Chair.

21 These are fairly arbitrary numbers but
22 having said that, the Province of New Brunswick found
23 that in fact by achieving 50 per cent -- or 60 per cent
24 foliage protection, they were able to keep that forest
25 alive in the face of a continuing spruce budworm

1 outbreak. So that through practical experience they
2 could demonstrate that approximately 50 per cent of the
3 foliage saved each year was sufficient to keep the
4 trees alive.

5 The other thing from a very practical
6 standpoint was they found that those levels of foliage
7 protection generally were achievable in a field
8 setting, they weren't unrealistic, and so those two
9 factors themselves contributed to the establishment of
10 those two particular numerical standards.

11 Q. And how does the need for foliage
12 protection standards relate to the conclusion that you
13 have offered to the Board that there has been an
14 inconsistent level of control and protection achieved
15 in the area of the undertaking?

16 A. Well, I would like to call the
17 attention of the Board to Table 14 in our evidence and
18 I will use an overhead to illustrate that.

19 MS. CRONK: That is found, Madam Chair,
20 at page 181 in the statement of evidence.

21 DEAN CARROW: If we use as a source of
22 information this table, Table 14, which I might point
23 out, Madam Chair and Mr. Martel, is derived from annual
24 reports of the Forest Pest Control Forum from 1979 up
25 to 1989, 11 years of reports, and these are the

1 reports -- sorry, these are the results reported by the
2 Province of Ontario by the Ministry of Natural
3 Resources for their spruce budworm programs over that
4 time period.

5 What this table shows is, on a yearly
6 basis, the number of assessment plots that reached a
7 particular -- satisfied a particular numerical standard
8 and so the subtitle here is the Proportion of
9 Assessment Plots in which Foliage Protection Standards
10 was Achieved.

11 Now, arbitrarily I have used a standard
12 that was adopted by New Brunswick; in other words, the
13 60 per cent protection standard for balsam fir and 50
14 per cent protection standard for spruce.

15 But just using those particular standards
16 to illustrate the point, Madam Chair, if I could just
17 draw your attention to 1989, for example, under balsam
18 fir, the number of plots which achieved that protection
19 standard was 25 out of 53 plots or 47 per cent; in
20 other words, 47 per cent of the plots achieved a
21 protection standard of 60 per cent or better.

22 If you move across to spruce, 13 of the
23 51 assessment plots achieved a protection standard of
24 50 per cent or better; in other words, 25 per cent of
25 the plots.

1 MS. CRONK: Q. What does this data in
2 your view, Dean Carrow, illustrate?

3 DEAN CARROW: A. Well, I think there are
4 two ways to look at it. One can attempt to derive
5 comparisons from this type of data - and I might point
6 out there are always difficulties with doing that, but
7 this is the evidence, this is the best evidence we have
8 in terms of published reports - and the two comparisons
9 that come to mind of course are the relative efficacy
10 or relative protection achieved on balsam fir as
11 opposed to spruce, how those two compare, and of course
12 the comparison between the technology that has been
13 available since 1985 when only B.t.k. was available and
14 the technology that was available prior to 1985 when
15 both chemicals and B.t.k. were available.

16 And if I could just deal with the latter
17 one first. I think it's interesting to look at - if we
18 could just visualize a line drawn right across here,
19 before 1985 - we are talking about a situation since
20 1985 in which only B.t.k. was used; prior to 1985, the
21 resource managers or forest managers had the option of
22 B.t.k. or chemical to use on a yearly basis.

23 If we look at balsam fir, in a general
24 sense there has been a fairly consistent level of
25 foliage protection achieved if we use that particular

1 parameter; prior to 1985, for example, 70 per cent of
2 all of those plots achieved a protection standard of 60
3 per cent. Since 1985, 67 per cent achieved the
4 standard.

5 So that is as consistent as you are going
6 to find I think. So there has been a relatively
7 consistent level of foliage protection -- or, sorry, a
8 relatively consistent level of success achieved through
9 those years with balsam fir.

10 However, if you look at the spruce
11 situation it's somewhat different. Prior to 1985 - and
12 if we take all of those plots - we find that 84 per
13 cent of those plots indicate that they received an
14 adequate level of protection; in other words, they
15 received a level of protection on spruce that was 50
16 per cent or better. So the level of success then was
17 about 84 per cent.

18 Since 1985 that has dropped, and if we
19 take all of those plots the level of success achieved
20 on spruce is about 55 per cent, about a 30 per cent
21 reduction in level of success on spruce.

22 I might point out generally if we look at
23 it overall that there appear to have been some problem
24 years: 1979, 1983, '85, '88 and '89 and in fact, in
25 1979 for example, we have the situation in which the

1 level of protection and the level of success -- sorry,
2 the level of success on balsam fir is really
3 unacceptably low.

4 The level of success in 1983 on both
5 balsam and spruce is rather low, 38 to 40 per cent; the
6 level of success in 1985 relatively low on both balsam
7 and spruce, 38 per cent and 50 per cent; and 1988 good
8 level of success on balsam fir but less than 50 per
9 cent success on spruce; 1989 less than 50 per cent
10 success on balsam fir and only 25 per cent success on
11 spruce.

12 Q. In your experience, Dean Carrow, and
13 looking at this kind of analysis based on these type of
14 parameters, is B.t as effective as other chemical
15 insecticides in achieving protection of white spruce --
16 I should say spruce?

17 A. Yes, I think this particular
18 evidence, these particular data reported here would
19 indicate that there appears to be a problem with B.t on
20 spruce and it's a situation that's complicated by the
21 fact that the biological development of spruce is timed
22 differently from balsam fir. So that if we look at the
23 way in which the spruce budworm larvae feeds on balsam
24 fir and spruce it's quite different.

25 Balsam fir tends to open its buds sooner

1 than spruce, the needles become more exposed, the
2 larvae become more exposed earlier in the season and at
3 the time when the larvae are exposed and feeding on
4 balsam fir, quite often the larvae are still feeding
5 within the opening bud of spruce, so that they are not
6 exposed directly to sprays.

7 And going back to the limitation I
8 pointed out earlier with bacterial insecticides where
9 they have to be consumed to be effective, that
10 constitutes a real disadvantage in that particular case
11 because the larvae are often feeding internally within
12 an expanding bud and they have no way of contacting the
13 B.t directly.

14 But if you look at -- again, if you look
15 generally at the seven results for spruce in the
16 Ontario situation, as I pointed out earlier, generally
17 there is a lower level of success by about 30 per cent
18 since 1985.

19 Q. Could I refer you, Dean Carrow, as
20 well, please, to Exhibit 1136, the interrogatories that
21 have been filed and specifically to MNR interrogatory
22 No. 8.

23 A. Yes.

24 Q. Thank you. Could you indicate to the
25 Board, please, the nature of the inquiry and perhaps I

1 should ask first, were you author of the response to
2 this interrogatory?

3 A. Yes, I was.

4 Q. Could you outline for the Board,
5 please, the nature of the inquiry made and the
6 information that you provided in response?

7 A. The interrogatory from the Ministry
8 of Natural Resources is that:

9 "A statement is made that it is generally
10 recognized that protection of white
11 spruce is more difficult to achieve with
12 B.t.k. than with a chemical insecticide.
13 Is this statement based on the success
14 rates discussed in this paragraph; if
15 not, please advise the basis for the
16 statement?"

17 The response I gave, Madam Chair, was
18 essentially relating what I've just described, that in
19 fact the difference in the effectiveness is related to
20 a general difference of the feeding habits of spruce
21 budworm and the phenology of spruce and fir and the
22 fact that the insects are relatively less exposed to
23 B.t.k. on spruce than they are on balsam. This makes
24 it a very difficult operational challenge then to time
25 an application of B.t so that it will be equally

1 effective on balsam and spruce with just a single
2 application.

3 As I pointed out in Table 14, the data
4 there suggests that in fact it is more difficult to
5 achieve a high level of success with B.t. on spruce,
6 and I would also draw your attention to the evidence of
7 Mr. Joe Churcher before the Board in which he
8 acknowledged that B.t.k. was a more effective control
9 or protective agent for balsam fir than for white
10 spruce against spruce budworm.

11 Q. Dean Carrow, you told the Board
12 earlier this afternoon when outlining your comments on
13 the various slides that you showed the Board that
14 spruce -- I can't remember whether you said generally
15 speaking or in all cases, but you indicated that spruce
16 was less vulnerable to spruce budworm than was balsam
17 fir and that spruce took, I think you said, seven or
18 eight years to die from insect attack.

19 My question is simply this: That being
20 the case, why does it matter that there seems to be
21 more difficulty associated with achieving successful;
22 that is, very high protection levels with spruce than
23 with balsam fir in the use of B.t.?

24 A. Well, from a forest industry's
25 standpoint, it matters a lot if spruce is an important

1 component of your wood supply. And in fact, as I
2 understand it, spruce is an important component of the
3 wood supply and while it may take a little longer for
4 spruce budworm to kill spruce than it does balsam, it
5 does kill it.

6 It takes approximately eight or nine
7 years to do so, but in fact if spruce is not protected
8 from spruce budworm feeding and damage it will die just
9 as balsam fir does.

10 Q. What overall then is the position
11 that you take on this issue, Dean Carrow, and that the
12 Industry takes regarding the matter of foliage
13 protection standards?

14 A. I guess one of the things that I
15 could refer back to, Madam Chair, is the National
16 Forest Sector Strategy recommendation No. 9 which I put
17 up earlier in the presentation and the Industry
18 position, of course, is that foliage protection
19 standards, numerical standards are very important and
20 are needed.

21 One of the components of that strategy
22 statement is that all pest management operations should
23 be ecologically and economically justified, and it's my
24 view that it's very difficult to justify, either on
25 ecological or economic grounds, a spray program, a

1 protection program unless you have a numerical standard
2 against which to measure the success of that program.

3 It's clear that those standards are
4 rather arbitrary at this time and certainly there needs
5 to be more research done on a credible standard for the
6 area of the undertaking, but it's my belief and it's
7 the position of the Industry that that standard is
8 needed and it should be pursued as quickly as possible.

9 Q. You have mentioned twice now, if not
10 more frequently, Dean Carrow, in the course of your
11 evidence the National Forest Sector Strategy and you
12 earlier referred to recommendation No. 9.

13 Did you participate in any way in the
14 development of that strategy?

15 A. Yes, I was a member of the task force
16 that developed the strategy.

17 Q. And as a member of the task force
18 what was your role?

19 A. At the time I was representing the
20 forestry professionals of Canada in my role as
21 President of the Canadian Institute of Forestry.

22 Q. And were you involved in the actual
23 formulation and drafting of the strategy document?

24 A. Yes, I was.

25 Q. Including recommendation No. 9 or

1 excluding it?

2 A. No, including it.

3 Q. All right. Could I ask you then, if
4 you would, Dean Carrow, to turn to what the Board will
5 be ultimately hearing evidence on from Dr. McCormack
6 and that is the need for flexibility in decision-making
7 from the Industry's point of view.

8 Do you, based on your experience both as
9 a forester and entomologist, have a view as to the
10 desirability and flexibility in protection measures?

11 A. Yes. The position of the Industry,
12 and I certainly endorse that position, is found on page
13 186 of the evidence and essentially it says that:

14 "Given changing mill and end product
15 demands and the diversity of forest types
16 and site conditions prevalent in the area
17 of the undertaking:

18 (a) flexibility in tending and
19 protection decision-making on each
20 management unit is essential; and.

21 (b) it is critical that a broad range of
22 cost effective management alternatives
23 for tending and protection activities be
24 available to timber managers."

25 Q. Can you explain for the Board,

1 please, Dean Carrow, the basis for that position that
2 you take and that the Industry takes?

3 A. I think the best way of describing
4 that basis is to summarize some of the points that I
5 have been making in the evidence this afternoon.

6 Certainly the need for flexibility is
7 clear when one looks at some the of following factors.
8 We are faced right now with the situation in the area
9 of the undertaking in which there are no available
10 controls for 12 of the major insect pests that are
11 found in the area, there is a recognized limited
12 effectiveness of B.t.k. in the sense that it's
13 effective against only certain piece of insects, there
14 is a very limited effectiveness of virus in that it's
15 effective against only one species of insect.

16 And I think the last table that I
17 reviewed with you illustrated clearly that foliage
18 protection was very difficult to consistently achieve
19 without the advantage of alternative technology; in
20 other words, flexibility in terms of pest control
21 technology including chemical insecticides.

22 Q. In your view, based on your
23 experience in this area, Dean Carrow, is that form of
24 flexibility available today in the context of
25 protection measures in the area of the undertaking?

1 A. No, it's not available.

2 Q. Why is that?

3 A. Well, certainly the provincial ban,
4 the generic ban on the use of chemical insecticides in
5 the area of the undertaking removes a very high degree
6 of that flexibility. Essentially there are, as I've
7 said earlier, the resource -- the forest manager is
8 forced to rely solely on B.t.k. and virus to deal with
9 all of the insect problems that he or she is faced.

10 Q. You mentioned a few moments ago, Dean
11 Carrow, the need for pursuing in your view the
12 development of foliage protection standards in the area
13 of the undertaking. Do you have a view as to the need,
14 if any, for research and development regarding
15 insecticides for potential use in the area of the
16 undertaking?

17 A. The position of Industry with respect
18 to research and development is found on page 189 of the
19 evidence, and I certainly endorse this position
20 strongly, that:

21 "Research, development and registration
22 of additional insect control agents, both
23 biological and chemical, for use in
24 timber management in the area of the
25 undertaking must be supported and

1 encouraged."

2 Q. Again, Dean Carrow, what is the basis
3 or rationale for urging that conclusion on the Board?

4 A. I would like to mention three factors
5 I guess. One is that there have been three recent
6 events, Madam Chair and Mr. Martel, that illustrate the
7 very strong need for a much expanded research and
8 development effort on more insect control technology
9 for forest managers across Canada, including Ontario.

10 One was the CCREM task force effort in
11 the early 1980s which sat for a period of three years
12 and that particular task force in carrying out its work
13 identified several very serious obstacles in Canada to
14 research and development and registration of new
15 pesticide technology for forestry use.

16 It also identified the very serious
17 impact, the negative impact of provincial bans such as
18 the one that's currently in place in Ontario on
19 research and development, particularly for the bans
20 that are purely politically based since the chemical
21 industry or the agricultural chemical industry of
22 course then considers that a very uncertain environment
23 for research and development and investment.

24 And perhaps one of the best examples of
25 that is to draw your attention to Appendix D of our

1 evidence.

2 Q. Appendix D?

3 A. Appendix D as in Donald.

4 Q. Thank you.

5 A. I draw to your attention there, Mr.
6 Martel and Madam Chair, two letters. One from May &
7 Baker which, until recently, was carrying out research
8 in support of registration of a new forestry
9 insecticide called Zectran and the text of the letter
10 makes it clear that the environment within Canada is
11 such that they did not see that it was justified for
12 them to carry on an investment in the development of
13 this product, and as a result they made the decision to
14 stop their development work and withdraw the product
15 from further registration testing.

16 Following that I believe is a letter from
17 Chemagro which was the supplier of Matacil or aminocarb
18 and the first letter documents a company decision to
19 stop producing Matacil in 1986. The low forestry
20 demand was given as the reason and that's easy to
21 understand because Matacil was an insecticide that was
22 developed solely or exclusively for forestry use,
23 it had no other use at all.

24 And as a result of provincial bans on the
25 use of chemical insecticides in Canada, including

1 Ontario, the demand for Matacil dropped rather
2 dramatically and the company decided to stop producing
3 the material in 1986. There is another letter in 1989
4 that simply confirms that - to use their terminology -
5 Matacil is dead.

6 So the interesting thing about that I
7 think is that in those two cases there have been two
8 corporate decisions made to stop the production or stop
9 research and development on new technology for forestry
10 use based on a perception that chemical technology is
11 going to encounter difficulty.

12 I might point out, Madam Chair and Mr.
13 Martel, that Matacil at the time was considered widely
14 to be the most environmentally benign insect to have
15 ever been developed. It had very, very low
16 environmental impact, its human health effects were
17 next to nil and it was a highly acceptable material,
18 but it had the unfortunate characteristic of being a
19 chemical and, therefore, fell into the generic ban.

20 Q. Just dealing with the issue of the
21 CCREM task force to which you referred, Dean Carrow,
22 the Board has heard evidence from other witnesses about
23 that task force. Were you personally involved in any
24 way with it?

25 A. Yes, I was. I chaired the task force

1 for three years.

2 Q. In what capacity did you do so?

3 A. At the time I was Supervisor of pest
4 control with the Ministry of Natural Resources and then
5 later Assistant Deputy Minister in the Province of New
6 Brunswick.

7 Q. What generally was the purpose of the
8 task force which you chaired?

9 A. The task force was created largely
10 because forest managers across Canada complained that
11 pest control technology was simply not available to
12 them to manage both competing vegetation and insect
13 pests and, in fact, there appeared to be a number of
14 very serious obstacles to getting new technology
15 registered.

16 So the task force was charged by the
17 council with identifying what those obstacles were and
18 trying to expedite the registrations of the materials
19 where possible.

20 Q. You said that there were -- I thought
21 you said three recent events or three matters that had
22 to do with the conclusion that you put forward before
23 the Board on research and development needs. What is
24 the second?

25 A. The second one relates to the current

1 pesticide registration review process which is going on
2 in Canada under the egis of the Minister of Agriculture
3 and it is interesting to draw to your attention I think
4 one of the major focuses of that registration review
5 and that is to design an entirely new registration
6 system for pesticides in Canada.

7 The team was set up or the review was set
8 up to comprehensively review the registration system
9 and seek ways to improve it, and in doing so the team
10 has identified six basic principles that will guide the
11 new registration system and interesting one of the key
12 principles is, and I quote:

13 "The system must increase access to new
14 pest control technology that reduces risk
15 of harm to health and the environment."

16 What the system is striving to do then is
17 to facilitate the development of new technology that is
18 judged to be less harmful to health and the
19 environment.

20 The irony of that is that provincial bans
21 on the use of chemicals, such as one in Ontario, has
22 the effect of stagnating development of new technology
23 and, in fact, the manufacturers look at that as a
24 signal that they may or may not develop a product which
25 will ultimately be accepted. So they are not very

1 enthusiastic about undertaking very expensive new
2 research and development programs which, as you've
3 heard earlier from Dr. Ritter, generally run in the
4 order of 20- to \$25-billion investment.

5 The third point that I wanted to make as
6 a basis for the position supporting the need for R&D is
7 that in fact the National Forest Sector Strategy itself
8 points to the need for the forestry sector across
9 Canada to encourage the development and use of
10 alternative methods of pest control. The reality is
11 that those alternative methods of pest control simply
12 aren't there in the present day.

13 The technology that's available for
14 forest managers is extremely limited and often the
15 alternatives that are mentioned are nothing more than
16 theory.

17 Q. Did you have any personal -- sorry,
18 do you have personal involvement, Dean Carrow, with the
19 pesticides registration review that is now ongoing
20 about which you've just spoken?

21 A. Yes, I am representing the forestry
22 sector on that review team, review process.

23 Q. And in connection with your last
24 reference to the National Forest Sector Strategy, are
25 you familiar, Dean Carrow, with the concept of

1 integrated pest management?

2 A. Yes, I am.

3 Q. What does it mean to you?

4 A. Integrated pest management is an
5 approach to management of pest problems that has grown
6 up over a period of decades and was intended over time
7 to introduce a system which would reduce the reliance
8 of growers, of users on controlled technology and what
9 it involves is the use of a variety of techniques and a
10 variety of measures in an integrated fashion that will
11 overall reduce the level of damage caused by pests to
12 important crops and ultimately would reduce the need
13 for the use of control technology.

14 It would include techniques in forestry,
15 if I could point to forestry specifically. It would
16 include techniques such as silvicultural techniques,
17 the use of strains that apparently are resistant to
18 insect pests or diseases, silvicultural techniques that
19 reduce the susceptibility of particular stands to
20 attack by insects or diseases, modified harvesting
21 operations which might be used to lower the level of
22 impact of insects, it would include biological
23 insecticides, it would include chemical insecticides,
24 it may include quarantine measures, just as an example
25 of some of the techniques that could be used.

1 Q. Do you support the concept of
2 integrated pest management?

3 A. Yes, I do.

4 Q. Does it in your view as contemplated
5 by the National Forest Sector Strategy - let's just
6 deal with that strategy document for the moment - does
7 it in your view seek to exclude or incorporate the use
8 of chemical insecticides expressly in either way?

9 A. No, it doesn't either expressly
10 exclude or include any particular technology.

11 Q. All right. Is the Ontario position
12 regarding the use of chemical insecticides consistent
13 or inconsistent in your view with integrated pest
14 management?

15 A. It is highly inconsistent at the
16 present time because it removes or makes unavailable
17 one of the primary technologies that has historically
18 been available for management of forest pests and that
19 is chemical insecticides.

20 Q. Given what you have said, Dean
21 Carrow, regarding the need for research and development
22 insect control agents - and I am looking at the
23 overhead that you now have before the Board - given
24 your views in that regard, if research were directed in
25 the future towards new strains of biological, viral

1 insecticides would there still be a need in your
2 opinion for research and development concerning new
3 chemical insect control agents?

4 A. Yes, I think most certainly there
5 would be a need. I think one of the -- I guess there
6 are two promising areas of technology for insect
7 control.

8 One is in the general area of biological
9 agents or organisms such as bacterial viruses. The
10 other is in the general area of bio-chemicals and by
11 that I mean naturally occurring chemicals that modify
12 the behaviour of -- either modify the behaviour or
13 modify the physiology of insects without necessarily
14 killing them.

15 Two examples of those are farinose which
16 can be used to alter the behaviour of insects, in fact
17 to attract them to specific points or in fact to dispel
18 them from specific points, and also hormone analogues
19 which can be used to interrupt the normal growth
20 pattern of the insect.

21 Q. If it were suggested at this hearing
22 that future research and development efforts should be
23 concentrated either primarily or exclusively on
24 biological insect control agents, would that -- given
25 your experience, would the need for protection in the

1 area of the undertaking be appropriate or
2 inappropriate?

3 A. Well, I think that situation is
4 changing quite rapidly and I think what is coming
5 forward in recent years is a recognition that
6 biological control organisms have a very limited
7 potential without some type of strain improvement or in
8 fact genetic manipulation.

9 It just seems to be reality that the
10 effectiveness of some of the biological control agents
11 is relatively low to moderate and in order to bring
12 that effectiveness up to a higher level, a level that's
13 acceptable to managers, then in fact some type of
14 genetic manipulation may be required.

15 When one considers that, I think the
16 prospect of that technology being accepted and indeed
17 registered is not all that encouraging at the present
18 time.

19 As an alternative, the bio-chemical
20 technology, which I spoke of earlier, particularly
21 hormone analogues and farinose, has the advantage of
22 being identified chemicals which are naturally
23 occurring, the environmental and health effects of
24 those could be well documented under testing regimes
25 and, in fact, I guess in view of that that circumstance

1 myself I would say there is a greater probability for
2 success and application of the bio-chemical technology
3 at the present time than for a greatly increased effort
4 on microbial insecticides, for example.

5 Q. Under the current policy of the
6 Minister of Natural Resources regarding the use of
7 chemical insecticides as you have described it to the
8 Board, would the use of bio-chemical insect control
9 agents be permissible?

10 A. My understanding is they would not be
11 permitted because they are chemicals.

12 Q. Could you outline then for the Board,
13 if you would, Dean Carrow, in a summary way what
14 your -- what the position of the Industry is with
15 respect to the protection issues before the Board and
16 what your own views are with respect to those issues
17 and what you are asking the Board to consider and
18 conclude?

19 A. Madam Chair, Mr. Martel, I would like
20 to conclude by making six points which I think
21 summarizes the evidence that I have been presenting
22 this afternoon.

23 First of all, the Industry supports and I
24 endorse that support for the Ministry of Natural
25 Resources policy on insecticide spraying, the one that

1 outlines three purposes of spraying; that is, outbreak
2 control, containment of outbreaks and foliage
3 protection, with a strategy of early intervention.
4 Early invention clearly is the preferred strategy.

5 I would like to leave with you the
6 message that the use of authorized insecticides
7 including chemical and biological insecticides under
8 regulatory controls is absolutely essential.

9 And with respect to the ban on the use of
10 chemical insecticides in the forest environment which
11 is presently in place in the Province of Ontario, I
12 would like to point out that this ban clearly
13 contravenes the National Forest Sector Strategy in two
14 particular ways.

15 First of all, it actively discourages
16 research and development on new alternatives; and,
17 secondly, without the availability or access to
18 chemical technology it precludes the use of integrated
19 pest management as it's defined. My personal view is
20 that the ban is not scientifically based and for that
21 reason alone it should be removed.

22 I have pointed to the need for
23 quantitative standards for foliage protection for the
24 measurement of foliage protection programs and clearly
25 research is needed to develop appropriate standards for

1 the Province of Ontario.

2 And certainly there can be no doubt about
3 the need for new insect control agents particularly in
4 view of the limited technology that's available, and
5 our view is that research and development on new insect
6 control agents should be strongly supported.

7 Q. Thank you, Dean Carrow. I have only
8 two remaining questions at this time of you and perhaps
9 I should give you a chance to resume your seat.

10 Could I ask you to put before you again,
11 Dean Carrow, if you would, please, the 1985 policy of
12 the Ministry of Natural Resources regarding aerial
13 application of insecticides.

14 MS. CRONK: That for the record, Madam
15 Chair, is policy FR 04 10 01 dated November the 1st,
16 1985.

17 Q. Do you have that, Dean Carrow?

18 DEAN CARROW: A. Yes, I do.

19 Q. Could I ask you to go back, if you
20 would please, and look at page 2 again of the policy
21 and the first full paragraph.

22 You spoke of this earlier this afternoon
23 and I direct your attention again to the second
24 sentence of that paragraph.

25 If it was proposed before this Board that

1 the policy reflected in this policy statement be
2 altered or that a new policy be adopted which provided
3 that where feasible non-chemical alternatives exist,
4 those alternatives should be favored for protection
5 activities, would you, based on your experience and
6 knowledge in the area of protection activities,
7 consider that an appropriate policy and an appropriate
8 test for selecting among insect control agents?

9 A. I guess without a precise definition
10 of feasible, I would be reluctant to answer that
11 categorically, Ms. Cronk, but I would emphasize that
12 that second sentence essentially reflects reality.

13 It's absolutely essential before any
14 forest manager uses control technology in Canada that
15 that technology satisfy all three of those criteria;
16 not one of them, but all three.

17 The technology has to be commercially
18 available, it can't be found just in a textbook; it has
19 to be reasonably cost effective, and that as I said
20 earlier means it has to be reasonably affordable; and
21 it has to provide an adequate level of protection or
22 control and, of course, it has to be federally
23 registered and provincially approved for use.

24 So if feasibility can be defined to
25 include all three of those criteria, then I guess that

1 is acceptable.

2 Q. And if it cannot or is not?

3 A. No, I think all three of those
4 criteria are absolutely mandatory.

5 Q. And in your view, must all three,
6 only one, or more than the three be satisfied on this
7 issue of the use of biological versus chemical
8 insecticides?

9 A. No, it's essential. As I said,
10 essentially reality requires that all three be
11 satisfied, you can't -- first of all, the material has
12 to be federally and provincially approved to comply
13 with the appropriate legislation in Canada and the
14 Province of Ontario; it has to be commercially
15 available or the product simply is not going to be
16 around for purchase and; thirdly, there is no basis for
17 forcing any manager to use a material that is not cost
18 effective.

19 Q. In light of the evidence that you
20 have given, Dean Carrow, to the Board today, would you
21 regard it as appropriate in terms of protection and
22 desirable protection of the timber resource that no
23 chemical insecticide use be permitted henceforth in the
24 area of the undertaking?

25 A. No, I consider that a highly

1 undesirable situation.

2 Q. In your opinion can adequate outbreak
3 control be achieved in the area of the undertaking for
4 the major pests that are prevalent in the area of the
5 undertaking without the use of chemical insecticides?

6 A. I don't believe it can.

7 Q. Is there anything else in conclusion
8 on this issue that you wish now to express to the
9 Board, or does that complete your evidence on these
10 issues?

11 A. No, that completes my evidence.

12 Q. Thank you.

13 MS. CRONK: Madam Chair, Mr. Martel, I
14 had hoped that we might actually be able to deal in
15 part today with some of the case study tending
16 evidence, but I am conscious of the time and, in the
17 circumstances, it was always intended that that be
18 presented in combination with Dr. McCormack's evidence
19 and I know you have a scoping session scheduled for
20 this evening.

21 May these witnesses be excused now until
22 May the 14th?

23 MADAM CHAIR: Yes, Panel. Thank you very
24 much, and we will see you in Toronto on Monday, May the
25 14th.

1 --- (Panel withdraws)

2 MADAM CHAIR: Ms. Cronk, do you want to
3 go into the scoping session now?

4 MS. CRONK: Yes. Thank you, Madam Chair.
5 Could we have just five minutes to make sure we have
6 the right materials and so that I can confirm travel
7 arrangements with these witnesses who are about to
8 depart.

9 MADAM CHAIR: That is fine. Why don't we
10 come back in 10 minutes.

11 MS. CRONK: Thank you. I appreciate it.

12 ---Recess taken at 5:05 p.m.

13 ---On resuming at 5:20 p.m.

14 MADAM CHAIR: Please be seated. We have
15 two matters to bring to your attention before we start
16 the scoping session for Panel 8.

17 The first is that there will be a party
18 for all of us at 79 College Street tomorrow night at
19 7:30, that is Michel Devaul's house, and the party is
20 being hosted by Genest, Murray. So we will see you at
21 7:30 tomorrow evening.

22 MS. SEABORN: I hope everyone will be
23 there.

24 MADAM CHAIR: And the second matter has
25 to do with a regulation that came to my attention.

1 It's an exemption to the Ministry of Natural Resources,
2 MNR 20 67, and what I am asking, Ms. Seaborn - and
3 perhaps you want to consult with Mr. Freidin about
4 this - the Board simply wants a clarification of what
5 this regulation means and if it has anything to do with
6 the Class Environmental Assessment.

7 It's concerning a request from the
8 Minister of Natural Resources about an undertaking on
9 the disposition by the Ministry of Natural Resources of
10 certain or all rights to Crown resources may be
11 exempted from application of the Act pursuant to
12 Section 29.

13 And Mr. Martel and I would like some
14 understanding of what this is intended to cover and
15 what it means.

16 MR. FREIDIN: Is there an actual Ontario
17 Regulation number in the top right-hand corner?

18 MADAM CHAIR: Yes. Ontario Regulation
19 145/90.

20 MR. FREIDIN: Thank you.

21 MADAM CHAIR: I have a copy here. I
22 could have Ms. Devaul make copies for you tomorrow.

23 MR. FREIDIN: Yes, please.

24 MS. SEABORN: Thank you.

25 MADAM CHAIR: Thank you.

1 Ms. Cronk, this is your Panel?

2 MS. CRONK: It is, Madam Chair.

3 MADAM CHAIR: Panel 8.

4 It has become customary for the Board to
5 go through a short list of clarifications they would
6 like to see in terms of the evidence.

7 MS. CRONK: Thank you.

8 MADAM CHAIR: And we have six points we
9 would like to start off with.

10 On page 89 we want to know if Industry is
11 satisfied with the way in which MNR conducts free to
12 grow surveys. Is there sufficient MNR personnel and
13 resources to carry out the surveys on the schedule
14 requested by Industry; in other words, if your people
15 request a free to grow survey, is that done as quickly
16 as you want it to be done, or is there a backlog of any
17 sort?

18 MS. CRONK: I have the first point of
19 that, Madam Chair. As I will only have transcript of
20 this on Thursday morning, could you repeat the second
21 point; is there sufficient...?

22 MADAM CHAIR: MNR personnel or resources
23 to carry out these surveys on the schedule requested by
24 Industry? Are they done when you request them?

25 On page 91 examples are listed of company

1 initiated monitoring measures and we want to know if
2 the results of these monitoring measures are always
3 disclosed to the MNR.

4 And we ask this question because on page
5 93 you state that the company utilizes monitoring
6 techniques suited to the policies and procedures of
7 their own corporate organizations.

8 MR. FREIDIN: What page was that latter
9 statement on?

10 MADAM CHAIR: 93.

11 MR. FREIDIN: Thank you.

12 MADAM CHAIR: In the discussion of the
13 new timber production policy which the Industry makes
14 clear they wish to be involved in and will likely be
15 involved in, will Industry be giving evidence to this
16 hearing on its assessment of the timber production
17 capacity of the area of the undertaking?

18 In other words, does Industry think that
19 capacity will be increased or decreased from the 1972
20 levels in the current timber production policy?

21 On page 145 --

22 MS. CRONK: Sorry, Madam Chair, could I
23 have a minute.

24 MR. FREIDIN: Madam Chair, you say
25 whether the timber production capacity in the area of

1 the undertaking will be increased or decreased. By
2 capacity, what did you mean?

3 MADAM CHAIR: The amount of production
4 that is currently the objective of the 1972 timber
5 production policy.

6 MR. FREIDIN: I see. The 9.1 cunits?

7 MADAM CHAIR: Or cunits, yes, 9.1-million
8 cunits annually.

9 MS. CRONK: Thank you.

10 MADAM CHAIR: On page 145, would you
11 please explain Industry's view of the administrative
12 reason for MNR's decision to cap nursery stock
13 production levels.

14 MS. CRONK: Thank you.

15 MADAM CHAIR: The point is made
16 repeatedly that Crown management units should be
17 treated in the same way as FMAs with respect to
18 renewal.

19 The Board heard an opinion from a witness
20 on a previous Industry panel, Mr. Johnston, who made
21 the comment to the effect that more regeneration is
22 done on FMAs than CMUs. Is this the view of Industry
23 generally?

24 MS. CRONK: Thank you.

25 MADAM CHAIR: And the final matter on

1 which the Board wishes clarification is this question:
2 Are there situations where FMA companies have spent
3 money to overcome a shortfall in MNR expenditures on
4 silviculture?

5 MS. CRONK: Can I have that again, Madam
6 Chair?

7 MADAM CHAIR: Are there situations where
8 FMA companies have spent money to overcome a shortfall
9 in MNR expenditures on silviculture.

10 For example, we saw evidence in Panel 1
11 that suggested E.B. Eddy paid for regeneration over the
12 amount compensated for by the MNR and we didn't see
13 that sort of evidence here and we are curious about
14 that.

15 MS. CRONK: Were there any particular
16 type of expenditures that the Board had in mind? I
17 presume it relates to renewal.

18 MR. MARTEL: Yes.

19 MADAM CHAIR: Yes.

20 MS. CRONK: Silvicultural expenditures?

21 MADAM CHAIR: Yes. And those are the
22 matters we wish to raise.

23 Did you have any questions, Ms. Cronk,
24 for the other parties with respect to their statements
25 of issue?

1 MS. CRONK: I did have questions but
2 there are a number of parties who are not here this
3 evening.

4 I have no time estimates for starters
5 from the parties as to the anticipated length of
6 cross-examination. And the scheduling matter alone, if
7 I could get some indication of those that are here, and
8 through the Board from the other parties, it's a little
9 difficult to know when to bring the next people in
10 without knowing that, so perhaps we can start with
11 that.

12 MADAM CHAIR: Well, I guess the other
13 two, that would be a matter of getting in touch with
14 the Ontario Federation of Anglers & Hunters and Forests
15 for Tomorrow.

16 MS. CRONK: I am asking in that regard
17 that through perhaps Ms. Devaul that an indication be
18 provided to the Board as to the length of time in
19 cross-examination. It has been difficult to connect
20 with those estimates of late.

21 MADAM CHAIR: We will have Ms. Devaul
22 make the phone calls tomorrow. Thank you.

23 MR. FREIDIN: I can indicate I will be
24 about half a day.

25 MS. SEABORN: I would expect three hours.

1 MS. CRONK: I can honestly say, Madam
2 Chair, that my questions really were directed to the
3 Anglers & Hunters and to Forests for Tomorrow, so I am
4 not sure from my point of view --

5 MADAM CHAIR: Will you have an
6 opportunity to telephone them?

7 MS. CRONK: Yes, I certainly will.

8 MADAM CHAIR: All right. Good luck.

9 MR. FREIDIN: How long are you going to
10 take in lead, Ms. Cronk?

11 MS. CRONK: The full two days.

12 MADAM CHAIR: Excuse me. Is Mr.
13 Castrilli cross-examining on 7 or 8?

14 MS. SEABORN: Panel 7.

15 MADAM CHAIR: That's right.

16 MS. SEABORN: Madam Chair, with respect
17 to the issue you raised this morning about advising
18 what exhibits we will need for our cross-examinations,
19 does the Board have a copy of all of MNR's witness
20 statements available to it in Toronto?

21 MADAM CHAIR: Yes, I think that we do,
22 but we should double check with Ms. Devaul.

23 MS. SEABORN: And I don't think I am
24 going to be able to be any more specific before I leave
25 on Thursday as to which exhibits I will be referring

1 to.

2 MADAM CHAIR: I guess the concern was was
3 maps and things that have to be bundled up, we don't
4 have any extra copies. We do have witness statements
5 and interrogatories and supplementary documentation.

6 MS. SEABORN: Those would be the
7 documents that I would be referring to, would be
8 anything obviously that Ms. Cronk files and any
9 material that MNR filed during their Panel 11 which was
10 their renewal panel, so if the Board has those exhibits
11 available.

12 In terms of interrogatory responses and
13 overheads and that sort of things, then I would
14 appreciate those being available next week.

15 Yes, all the exhibits filed during MNR's
16 Panel 11 I think would be necessary.

17 MADAM CHAIR: Is there any other
18 business?

19 MS. CRONK: There are two matters. I'm
20 considering, Madam Chair, this position. I am
21 concerned that given that the scheduling for the
22 commencement of the evidence by the renewal panel has
23 been moved up to Thursday morning, and not hearing from
24 either Forests for Tomorrow or the other parties not
25 present tonight as to the specifics or some more

1 particularity as to what they want covered, I only have
2 tomorrow, in fact in the case of some of the witnesses,
3 tomorrow afternoon to speak to them about this matter.

4 I will do what I can obviously to reach
5 them by phone as you suggested and find out what I can
6 in terms of an informal scoping session - if I can
7 describe it that way - but it had been my hope to have
8 the renewal witnesses specifically address issues
9 identified at that scoping session.

10 That is really not going to be possible.
11 I had some difficulty understanding even what the
12 flushing out of some of these issues are, based on
13 these statements.

14 So I simply say that now. I will do what
15 I can tonight and tomorrow morning to obtain whatever
16 further details I can, but what I am really saying is
17 that I will lead more of their evidence in chief than I
18 might otherwise have, unless I know by Thursday
19 morning. That is the first point.

20 The second relates to a matter that I
21 understand was raised and I've read now the transcript
22 and spoken with Mr. Cassidy on the scoping session of
23 Panel 7 and the issue, as I understood it -- one of the
24 issues that the Board raised, in addition to listing
25 the questions on which you would be interested in

1 receiving clarification, was this issue of what the
2 impact would be or what the effect would be were this
3 Board asked to make a recommendation that would have
4 the effect or be intended to have the effect of
5 influencing government policy.

6 And Mr. Cassidy alerted me that that had
7 been raised and, as I say, I have read the transcript.
8 I've had an opportunity to discuss it briefly with
9 certain of my friends, but not all of them, and I
10 thought perhaps we could raise it now for some
11 clarification from the Board.

12 The Board of course is aware that formal
13 legal submissions have been received on that issue, you
14 have two factums before you and there were submissions
15 made concerning what the legal effect is of a finding
16 by this Board or a condition attached by this Board
17 that affects government policy in various levels of
18 policy.

19 And I suppose the clarification that we
20 were seeking was whether there was some specific
21 elements of that on which you would wish to receive
22 further submissions, in which case, speaking for our
23 clients, of course we will do that.

24 I was somewhat at a loss, not having been
25 here, to know whether you wished the entire matter

1 re-argued or whether it was some particular portion - I
2 didn't think so - whether there was some particular
3 aspect of it that you would wish further assistance on.

4 I was in some confusion about that. I
5 recognize the argument was some considerable time ago
6 and I confess I didn't go back and re-read it myself,
7 but Mr. Cassidy tells me that on behalf of our clients
8 I made those submissions.

9 So perhaps it's all of those that have to
10 be clarified - I don't know - but if there is something
11 specific, I wonder if we are in a position this evening
12 to clarify that for us.

13 MADAM CHAIR: Well, I will try to do that
14 clarification.

15 Essentially we remember arguments that
16 were made in terms of how the Board should take into
17 account government policy, but the legal standing of
18 its final decision when it's made, and in this case we
19 wanted to be very, very sure that what you were saying
20 is you would expect -- if the application is approved
21 you would expect a condition of that application, a
22 formal condition attached to the application for
23 approval to be that the Board recommends that chemical
24 pesticides be used again in Ontario along some schedule
25 in some way.

1 MS. CRONK: I see.

2 MADAM CHAIR: And would that be a formal
3 condition of approval or--

4 MS. CRONK: I see, that's illusive.

5 MADAM CHAIR: --would that be a
6 recommendation in the body of the report, and then we
7 would like to extend -- we would like to look out a
8 little into the future and learn what would happen
9 if -- what sort of legal recourse would be available to
10 the government if they weren't willing to accept that
11 part of the decision by the Board. I don't think we
12 have ever taken it that far.

13 Now, Ms. Seaborn, had said earlier at our
14 last discussion of this issue, she thought it might be
15 a matter for legal argument at some point in the case
16 that would take it out of simply clarifying your
17 evidence in Panel 7.

18 MS. CRONK: Well, there is two elements
19 to it. The first is factual: Is there a specific
20 condition being proposed and, if so, will we be urging
21 on behalf of the Industry that it be in the body of the
22 Board's ultimate report or a specific term and
23 condition to be imposed by the Board.

24 That will be dealt with in evidence by
25 the tending panel. You will hear specifically those

1 witnesses outline for you, in fact it will be Mr.
2 Tomchick and Dean Carrow on Section 10 of the statement
3 of evidence, what terms and conditions specifically are
4 being sought by the Industry in that regard And so I
5 regard that as an evidentiary matter, if I can put it
6 that way, a factual matter that most certainly we will
7 address.

8 The other aspect of it in terms of what
9 the legal implications are should government find
10 whatever condition, if any, unacceptable or for
11 whatever reason what remedies does the government have,
12 I confess that I have never thought about the matter
13 from the aspect of what the government might or might
14 not choose to do.

15 MADAM CHAIR: Certainly the Board isn't
16 concerned with, what the government does has no
17 influence on our decision, but just in terms of the
18 framework for Board decisions if they happen to fly -
19 and not even using this particular situation as an
20 example - but if they fly in the face of current
21 government policy, we are interested in knowing the
22 mechanics of what happens when that is done.

23 MS. CRONK: There are certainly
24 submissions that can be made and clarified, if they
25 were made in the past, as to whether a condition of

1 that kind might be enforceable or not, or what the
2 vulnerability of enforcement might be, and if it's in
3 that connection, then speaking for myself --

4 MADAM CHAIR: And again this has no
5 bearing on whether we would make a decision of this
6 nature.

7 MS. CRONK: I understand.

8 MADAM CHAIR: It simply has to do with
9 our own curiosity about what one expect to follow.

10 MS. CRONK: I understand. So it's those
11 two elements then.

12 MADAM CHAIR: Yes.

13 MS. CRONK: If it is specifically a
14 condition or otherwise in the report, what exactly is
15 it we are asking for and what will happen if we get it?

16 MADAM CHAIR: But in terms of whether
17 there is going to be legal argument about this at some
18 time, yes, there probably would be.

19 MS. SEABORN: And I think that was all my
20 comments were directed at. Keeping in mind that we did
21 have one discussion on the jurisdiction of the Board to
22 make terms and conditions that may affect government
23 policy, following along from what Ms. Cronk said, my
24 client's interest would be in the second aspect, as to
25 whether or not you want us to go further in our

1 arguments and deal with that issue again, and it sounds
2 as though you would like us to.

3 And then the next question is: When
4 should that be done. And I think I suggested at the
5 last scoping session the evidentiary issues can
6 obviously be dealt with by the various parties as we
7 move through the case, but in terms of the legal effect
8 of terms and conditions --

9 MADAM CHAIR: Well, I think by the time
10 we move through the case we are going to have more than
11 this example of specific conditions that are going to
12 affect government policy and may be quite different
13 than the government policy in effect now.

14 So we might want to save that kind of
15 argument until farther along in the case.

16 MS. SEABORN: I think that's what I was
17 suggesting was, rather than have legal submissions in
18 the context of pesticides--

19 MADAM CHAIR: Of this one issue.

20 MS. SEABORN: --it seems to me it's a
21 broader issue that you would like people to address and
22 that is often a very obvious topic for discussion at
23 the end of a hearing in the submissions.

24 MR. FREIDIN: I can advise, Madam Chair,
25 that there is a provision in the Act which indicates

1 what Cabinet can do should it --what powers it has once
2 it receives the decision of the Board. And that does
3 provide some direction of the mechanics or the
4 structure as to what some options of government are.

5 And I can provide you - I can't provide
6 you with the specific section now - perhaps you are
7 aware of it.

8 MADAM CHAIR: Yes, we are aware of it,
9 Mr. Freidin.

10 All right. Is there anything else?

11 MS. CRONK: After the estimates of time
12 as to cross-examination provided to me, I take it that
13 she will be available to let other parties know.

14 MADAM CHAIR: Yes. Where are you going
15 to be, Ms. Cronk, tomorrow?

16 MS. CRONK: I will be here in Thunder Bay
17 until Friday.

18 MADAM CHAIR: If she wants to get in
19 touch with you tomorrow, do you have --

20 MS. CRONK: Yes. What's really in the
21 back of my mind, Madam Chair, is not particularly this
22 panel but what arrangements have to be made for the
23 balance of the tending panel, because we've been
24 talking about Monday, May 14th, but I don't know
25 whether the length of time on cross-examination is

1 going to consume all of next week.

2 Then with respect to Dr. McCormack, I
3 have to know whether we are talking after the 14th of
4 May, potentially we're not.

5 MADAM CHAIR: Have you given thought to,
6 if it was impossible to start in May, that you would
7 defer Panel 7 to the end of your case? Is that --

8 MS. CRONK: All things are possible if we
9 run into timing difficulties, and that very much
10 depends on Dr. McCormack's health.

11 MADAM CHAIR: I only ask because it may
12 be that we will want to scope Panel 9 sooner than we
13 had set the date for.

14 MS. CRONK: The difficulty I have --

15 MADAM CHAIR: But you don't know at this
16 point.

17 MS. CRONK: Well that, but in addition I
18 know now that Dr. McCormack, his health permitting, is
19 scheduled to be out of his country and ours for the
20 entire month of June on forestry commitments in New
21 Zealand, Australia and elsewhere.

22 These schedules are difficult to
23 co-ordinate. So that the possibility of setting that
24 evidence down doesn't really work on that basis.

25 So from a planning point of view on

1 behalf our client, again health permitting, I am
2 assuming that it must be done in the week of May 14th
3 and the week of May 28th given that the Board has a
4 site visit, and if we lose the time in the week of May
5 14th I have a difficulty.

6 However, that is my problem at the moment
7 and all I need to start being able to deal with that is
8 some indication of how long we are likely to be next
9 week.

10 MADAM CHAIR: All right. Thank you, Ms.
11 Cronk.

12 We will adjourn until 8:30 tomorrow
13 morning. Oh, we don't sit tomorrow, tomorrow afternoon
14 at five and eight o'clock on Thursday..

15 Tomorrow afternoon at five Mr. Colborne
16 will be here. He wishes to make a submission
17 concerning the letter from Ms. Murphy about the terms
18 and conditions.

19 ---Whereupon the hearing adjourned at 5:45 p.m., to be
20 reconvened on Wednesday, May 2nd, 1990, commencing
 at 5:00 p.m.

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